

SEQUENCE LISTING

<110> Carozzi, Nadine
Hargiss, Tracy
Koziel, Michael G.
Duck, Nicholas B.
Carr, Brian

<120> AXMI-007, A Delta-Endotoxin Gene and
Methods for Its Use

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<150> 60/448,812

<151> 2003-02-20

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Leu Ser Tyr Pro Ser Asn Arg Asn Ile Asp His Ser Arg Tyr Pro Tyr	
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aca aat aat cca aat caa cca tta caa aac aca aat tac aaa gag tgg	144
Thr Asn Asn Pro Asn Gln Pro Leu Gln Asn Thr Asn Tyr Lys Glu Trp	
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ctc aat atg tgt caa ggg aat aca caa tat ggt gat aat ttc gag aca	192
Leu Asn Met Cys Gln Gly Asn Thr Gln Tyr Gly Asp Asn Phe Glu Thr	
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ttt gct agt gct gat aca att gct gca gtt agt gca ggt act att gta	240
Phe Ala Ser Ala Asp Thr Ile Ala Ala Val Ser Ala Gly Thr Ile Val	
65 70 75 80	
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Ser Gly Thr Leu Leu Ala Gly Ile Gly Gly Leu Thr Ser Ile Ser Gly	
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Gln	Ser	Tyr	Asn	Thr	Ala	Leu	Asp	Asp	Trp	Arg	Lys	Leu	Lys	Arg	Leu	
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caa	gct	cct	gga	tta	cca	cca	tca	tca	gca	tta	caa	caa	gct	gcc	ttg	576
Gln	Ala	Pro	Gly	Leu	Pro	Pro	Ser	Ser	Ala	Leu	Gln	Gln	Ala	Ala	Leu	
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Thr	Leu	Lys	Ile	Arg	Phe	Glu	Asn	Val	His	Asn	Asp	Phe	Ile	Arg	Glu	
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Tyr	Ala	Gln	Ala	Ala	Asn	Phe	His	Leu	Asn	Leu	Leu	Gln	Gln	Gly	Ala	
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gaa	ttg	gct	gat	gaa	tgg	aat	gca	gat	ata	cat	cct	tca	caa	att	gaa	768
Glu	Leu	Ala	Asp	Glu	Trp	Asn	Ala	Asp	Ile	His	Pro	Ser	Gln	Ile	Glu	
			245						250					255		
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Pro	Asn	Ala	Gly	Thr	Ser	Asp	Asp	Tyr	Tyr	Lys	Leu	Leu	Lys	Glu	Asn	
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ata	cct	aaa	tat	agt	aac	tat	tgt	gca	aat	acc	tat	aga	gaa	gga	cta	864
Ile	Pro	Lys	Tyr	Ser	Asn	Tyr	Cys	Ala	Asn	Thr	Tyr	Arg	Glu	Gly	Leu	
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Tyr	Arg	Arg	Tyr	Met	Thr	Ile	Thr	Val	Leu	Asp	Thr	Ile	Ala	Gln	Phe	
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Gly Ile Lys Thr Glu Leu Thr Arg Glu Ile Tyr Thr Thr Glu Ile Asn	
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ttt gac cgt ctt act tac ctt gaa att caa ccc aat ctc gct ata atg	1104
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Glu Tyr Asn Leu Thr Arg Ser Gly Leu Arg Leu Phe Ser Phe Leu Asp	
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Gly Ile Ala Asn Arg Asn Arg Ser Thr Tyr Ala Thr Thr Gly Thr Glu	
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att ata tat gga gaa aga aca ggt cca ccc aca aca aaa act tta ata	1296
Ile Ile Tyr Gly Glu Arg Thr Gly Pro Pro Thr Thr Lys Thr Leu Ile	
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Pro Phe Glu Ser Tyr Lys Val Ser Ile Val Thr Asp Arg Gln Val Thr	
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Gly Asn Leu Ser Asn Asp Lys Lys Thr Thr Asp Phe Gln Phe Pro Val	
485 490 495	
aaa aaa gac tgt aaa cca att att aat cca aat tgt tta cca agc tat	1536
Lys Lys Asp Cys Lys Pro Ile Ile Asn Pro Asn Cys Leu Pro Ser Tyr	
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aat agt tat agt cat att tta tcc cag ttt tct tta ttt aat tat tcc	1584
Asn Ser Tyr Ser His Ile Leu Ser Gln Phe Ser Leu Phe Asn Tyr Ser	
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Tyr Lys Ile Gly Leu Ala Leu Asn Ile Leu Tyr Thr Gly Ala Leu Gly	
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Lys	Val	Ile	Glu	Gly	Pro	Gly	His	Thr	Gly	Gly	Asn	Leu	Val	Tyr	Leu	
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Gln	Ser	Gln	Gly	Arg	Leu	Glu	Ile	Thr	Cys	Arg	Thr	Pro	Asn	Ser	Thr	
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Pro	Leu	Asn	Arg	Asn	Ile	Pro	Phe	Ile	Phe	Asn	Arg	Ala	Asp	Val	Ser	
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Asn	Ser	Ile	Leu	Ile	Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Ile	Thr	Ser	
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Ser	Val	Arg	Gln	Asn	Arg	Glu	Lys	Gln	Lys	Leu	Glu	Thr	Ile	Gln	Thr	
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<213> Bacillus thuringiensis

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Ile	Ile	Tyr	Gly	Glu	Arg	Thr	Gly	Pro	Pro	Thr	Thr	Lys	Thr	Leu	Ile	
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 Gly Asn Leu Ser Asn Asp Lys Lys Thr Thr Asp Phe Gln Phe Pro Val
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 Asn Ser Tyr Ser His Ile Leu Ser Gln Phe Ser Leu Phe Asn Tyr Ser
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 Tyr Lys Ile Gly Leu Ala Leu Asn Ile Leu Tyr Thr Gly Ala Leu Gly
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 Trp Thr His Ser Ser Val Asn Arg Asn Asn Ala Ile Ser Asp Lys Ile
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 Ile Thr Met Ile Pro Ala Ile Lys Gly Asn Ser Leu Asp Thr Asn Ser
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 Lys Val Ile Glu Gly Pro Gly His Thr Gly Gly Asn Leu Val Tyr Leu
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 595 600 605
 Gln Ser Tyr Tyr Ile Arg Leu Arg Tyr Ala Thr Asn Gly Ala Gly Asn
 610 615 620
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 625 630 635 640
 Pro Gln Arg Leu Asn Asn Thr Phe Ser Gly Thr Asn Tyr Asn Asn Leu
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 Gln Tyr Gly Asp Phe Gly Tyr Phe Gln Phe Pro Ser Thr Val Thr Leu
 660 665 670
 Pro Leu Asn Arg Asn Ile Pro Phe Ile Phe Asn Arg Ala Asp Val Ser
 675 680 685
 Asn Ser Ile Leu Ile Ile Asp Lys Ile Glu Phe Ile Pro Ile Thr Ser
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Thr Leu Leu Ala Gly Ile Gly Gly Leu Thr Ser Ile Ser Gly Pro Ile	
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Lys Met Gly Glu Ile Phe Val Asp Thr Pro Leu Thr Glu Ser Ile Lys	
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Gln Leu Lys Leu Gln Thr Leu Glu Gly Phe Arg Gln Ile Leu Gln Ser	
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Tyr Asn Thr Ala Leu Asp Asp Trp Arg Lys Leu Lys Arg Leu Gln Ala	
115 120 125	
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Pro Gly Leu Pro Pro Ser Ser Ala Leu Gln Gln Ala Ala Leu Thr Leu	
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145 150 155 160	
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Gln Ala Ala Asn Phe His Leu Asn Leu Leu Gln Gln Gly Ala Glu Leu	
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Ala Asp Glu Trp Asn Ala Asp Ile His Pro Ser Gln Ile Glu Pro Asn	
195 200 205	
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Lys Tyr Ser Asn Tyr Cys Ala Asn Thr Tyr Arg Glu Gly Leu Asn Lys	
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Tyr Gly Glu Arg Thr Gly Pro Pro Thr Thr Lys Thr Leu Ile Pro Phe	
370 375 380	
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Glu Ser Tyr Lys Val Ser Ile Val Thr Asp Arg Gln Val Thr Pro Thr	
385 390 395 400	
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420 425 430	
tta tct aat gat aaa aaa aca act gat ttt caa ttt cct gta aaa aaa	1344
Leu Ser Asn Asp Lys Lys Thr Thr Asp Phe Gln Phe Pro Val Lys Lys	
435 440 445	
gac tgt aaa cca att att aat cca aat tgt tta cca agc tat aat agt	1392
Asp Cys Lys Pro Ile Ile Asn Pro Asn Cys Leu Pro Ser Tyr Asn Ser	
450 455 460	
tat agt cat att tta tcc cag ttt tct tta ttt aat tat tcc tat aaa	1440
Tyr Ser His Ile Leu Ser Gln Phe Ser Leu Phe Asn Tyr Ser Tyr Lys	
465 470 475 480	
att gga tta gcg cta aat ata tta tat aca ggt gca tta gga tgg aca	1488

Ile	Gly	Leu	Ala	Leu	Asn	Ile	Leu	Tyr	Thr	Gly	Ala	Leu	Gly	Trp	Thr		
				485					490					495			
cac	agt	agt	gtt	aat	aga	aat	aat	gca	ata	tca	gat	aaa	ata	att	aca	1536	
His	Ser	Ser	Val	Asn	Arg	Asn	Asn	Ala	Ile	Ser	Asp	Lys	Ile	Ile	Thr		
			500					505					510				
atg	atc	cca	gca	atc	aaa	ggg	aac	agt	ctt	gat	aca	aac	tct	aag	gta	1584	
Met	Ile	Pro	Ala	Ile	Lys	Gly	Asn	Ser	Leu	Asp	Thr	Asn	Ser	Lys	Val		
			515				520					525					
att	gaa	gga	cct	ggg	cat	aca	gga	gga	aac	ttg	gtt	tat	tta	caa	agt	1632	
Ile	Glu	Gly	Pro	Gly	His	Thr	Gly	Gly	Asn	Leu	Val	Tyr	Leu	Gln	Ser		
			530			535					540						
caa	ggg	cgt	tta	gag	att	aca	tgt	aga	act	cct	aat	tct	aca	caa	tct	1680	
Gln	Gly	Arg	Leu	Glu	Ile	Thr	Cys	Arg	Thr	Pro	Asn	Ser	Thr	Gln	Ser		
					550				555						560		
tat	tac	att	aga	ctt	cga	tac	gct	aca	aat	ggg	gct	gga	aat	act	ctt	1728	
Tyr	Tyr	Ile	Arg	Leu	Arg	Tyr	Ala	Thr	Asn	Gly	Ala	Gly	Asn	Thr	Leu		
				565					570					575			
cct	aat	ata	tct	ctt	aca	ata	cca	gga	gta	ata	gga	ata	cca	cct	caa	1776	
Pro	Asn	Ile	Ser	Leu	Thr	Ile	Pro	Gly	Val	Ile	Gly	Ile	Pro	Pro	Gln		
				580				585					590				
cga	ctc	aac	aac	act	ttt	tct	ggg	aca	aat	tat	aat	aat	tta	caa	tac	1824	
Arg	Leu	Asn	Asn	Thr	Phe	Ser	Gly	Thr	Asn	Tyr	Asn	Asn	Leu	Gln	Tyr		
			595				600					605					
gga	gat	ttt	ggg	tat	ttc	caa	ttt	cca	agt	aca	gta	aca	tta	cct	tta	1872	
Gly	Asp	Phe	Gly	Tyr	Phe	Gln	Phe	Pro	Ser	Thr	Val	Thr	Leu	Pro	Leu		
			610			615					620						
aat	cga	aac	ata	cca	ttt	ata	ttt	aat	cgt	gca	gat	gta	tca	aat	tca	1920	
Asn	Arg	Asn	Ile	Pro	Phe	Ile	Phe	Asn	Arg	Ala	Asp	Val	Ser	Asn	Ser		
					630				635						640		
att	tta	atc	att	gat	aaa	att	gaa	ttt	ata	cca	att	act	tcc	tct	gta	1968	
Ile	Leu	Ile	Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Ile	Thr	Ser	Ser	Val		
				645					650					655			
cgc	caa	aat	aga	gaa	aaa	caa	aaa	tta	gaa	act	atc	caa	aca	aaa	ata	2016	
Arg	Gln	Asn	Arg	Glu	Lys	Gln	Lys	Leu	Glu	Thr	Ile	Gln	Thr	Lys	Ile		
			660					665					670				
aat	aca	ttt	ttc	aca	aat	cat	aca	aaa	aat	act	tta	aat	ata	gaa	gcc	2064	
Asn	Thr	Phe	Phe	Thr	Asn	His	Thr	Lys	Asn	Thr	Leu	Asn	Ile	Glu	Ala		
			675				680					685					
aca	aac	tat	gat	att	gat	taa										2085	
Thr	Asn	Tyr	Asp	Ile	Asp	*											
			690														

<210> 4

<213> *Bacillus thuringiensis*

Met	Cys	Gln	Gly	Asn	Thr	Gln	Tyr	Gly	Asp	Asn	Phe	Glu	Thr	Phe	Ala
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Ser	Ala	Asp	Thr	Ile	Ala	Ala	Val	Ser	Ala	Gly	Thr	Ile	Val	Ser	Gly
			20					25					30		
Thr	Leu	Leu	Ala	Gly	Ile	Gly	Gly	Leu	Thr	Ser	Ile	Ser	Gly	Pro	Ile
		35				40						45			
Gly	Ile	Ile	Gly	Ala	Ile	Ile	Ile	Ser	Phe	Gly	Thr	Leu	Ile	Thr	Val
	50				55						60				
Phe	Trp	Pro	Ala	Gly	Glu	Gln	Asp	Lys	Thr	Val	Trp	Thr	Gln	Phe	Ile
65				70						75				80	
Lys	Met	Gly	Glu	Ile	Phe	Val	Asp	Thr	Pro	Leu	Thr	Glu	Ser	Ile	Lys
				85					90					95	
Gln	Leu	Lys	Leu	Gln	Thr	Leu	Glu	Gly	Phe	Arg	Gln	Ile	Leu	Gln	Ser
			100					105					110		
Tyr	Asn	Thr	Ala	Leu	Asp	Asp	Trp	Arg	Lys	Leu	Lys	Arg	Leu	Gln	Ala
		115					120					125			
Pro	Gly	Leu	Pro	Pro	Ser	Ser	Ala	Leu	Gln	Gln	Ala	Ala	Leu	Thr	Leu
	130					135					140				
Lys	Ile	Arg	Phe	Glu	Asn	Val	His	Asn	Asp	Phe	Ile	Arg	Glu	Ile	Pro
145				150						155				160	
Gly	Phe	Gln	Leu	Glu	Thr	Tyr	Lys	Thr	Leu	Leu	Leu	Pro	Ile	Tyr	Ala
				165					170					175	
Gln	Ala	Ala	Asn	Phe	His	Leu	Asn	Leu	Leu	Gln	Gln	Gly	Ala	Glu	Leu
			180					185					190		
Ala	Asp	Glu	Trp	Asn	Ala	Asp	Ile	His	Pro	Ser	Gln	Ile	Glu	Pro	Asn
		195				200						205			
Ala	Gly	Thr	Ser	Asp	Asp	Tyr	Tyr	Lys	Leu	Leu	Lys	Glu	Asn	Ile	Pro
	210					215						220			
Lys	Tyr	Ser	Asn	Tyr	Cys	Ala	Asn	Thr	Tyr	Arg	Glu	Gly	Leu	Asn	Lys
225				230						235				240	
Leu	Arg	Asn	Glu	Pro	Asn	Met	Arg	Trp	Ser	Ile	Phe	Asn	Asp	Tyr	Arg
				245					250					255	
Arg	Tyr	Met	Thr	Ile	Thr	Val	Leu	Asp	Thr	Ile	Ala	Gln	Phe	Ser	Phe
			260					265					270		
Tyr	Asp	Ile	Lys	Arg	Tyr	Lys	Asp	Ser	Ile	Gly	Arg	Ile	Gly	Gly	Ile
		275					280					285			
Lys	Thr	Glu	Leu	Thr	Arg	Glu	Ile	Tyr	Thr	Thr	Glu	Ile	Asn	Phe	Asp
	290					295					300				
Arg	Leu	Thr	Tyr	Leu	Glu	Ile	Gln	Pro	Asn	Leu	Ala	Ile	Met	Glu	Tyr
305				310						315				320	
Asn	Leu	Thr	Arg	Ser	Gly	Leu	Arg	Leu	Phe	Ser	Phe	Leu	Asp	Glu	Leu
				325					330					335	
Ile	Phe	Tyr	Thr	Lys	Asn	Glu	Thr	Tyr	Gly	Asn	Arg	Leu	Val	Gly	Ile
			340					345					350		
Ala	Asn	Arg	Asn												

Leu	Asn	Asn	Ser	Pro	Ser	Asn	Lys	Leu	Thr	Tyr	Ser	Ala	Gly	Gly	Asn
			420					425					430		
Leu	Ser	Asn	Asp	Lys	Lys	Thr	Thr	Asp	Phe	Gln	Phe	Pro	Val	Lys	Lys
		435					440					445			
Asp	Cys	Lys	Pro	Ile	Ile	Asn	Pro	Asn	Cys	Leu	Pro	Ser	Tyr	Asn	Ser
	450					455					460				
Tyr	Ser	His	Ile	Leu	Ser	Gln	Phe	Ser	Leu	Phe	Asn	Tyr	Ser	Tyr	Lys
465					470					475					480
Ile	Gly	Leu	Ala	Leu	Asn	Ile	Leu	Tyr	Thr	Gly	Ala	Leu	Gly	Trp	Thr
				485					490					495	
His	Ser	Ser	Val	Asn	Arg	Asn	Asn	Ala	Ile	Ser	Asp	Lys	Ile	Ile	Thr
			500					505					510		
Met	Ile	Pro	Ala	Ile	Lys	Gly	Asn	Ser	Leu	Asp	Thr	Asn	Ser	Lys	Val
		515					520					525			
Ile	Glu	Gly	Pro	Gly	His	Thr	Gly	Gly	Asn	Leu	Val	Tyr	Leu	Gln	Ser
	530					535					540				
Gln	Gly	Arg	Leu	Glu	Ile	Thr	Cys	Arg	Thr	Pro	Asn	Ser	Thr	Gln	Ser
545					550					555					560
Tyr	Tyr	Ile	Arg	Leu	Arg	Tyr	Ala	Thr	Asn	Gly	Ala	Gly	Asn	Thr	Leu
				565				570						575	
Pro	Asn	Ile	Ser	Leu	Thr	Ile	Pro	Gly	Val	Ile	Gly	Ile	Pro	Pro	Gln
			580					585					590		
Arg	Leu	Asn	Asn	Thr	Phe	Ser	Gly	Thr	Asn	Tyr	Asn	Asn	Leu	Gln	Tyr
		595					600					605			
Gly	Asp	Phe	Gly	Tyr	Phe	Gln	Phe	Pro	Ser	Thr	Val	Thr	Leu	Pro	Leu
	610					615					620				
Asn	Arg	Asn	Ile	Pro	Phe	Ile	Phe	Asn	Arg	Ala	Asp	Val	Ser	Asn	Ser
625					630					635					640
Ile	Leu	Ile	Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Ile	Thr	Ser	Ser	Val
				645				650						655	
Arg	Gln	Asn	Arg	Glu	Lys	Gln	Lys	Leu	Glu	Thr	Ile	Gln	Thr	Lys	Ile
			660					665					670		
Asn	Thr	Phe	Thr	Asn	His	Thr	Lys	Asn	Thr	Leu	Asn	Ile	Glu	Ala	
		675				680					685				
Thr	Asn	Tyr	Asp	Ile	Asp										
															690

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<211> 1176

<212> PRT

<213> Bacillus thuringiensis

<400> 5

Met	Asp	Asn	Asn	Pro	Asn	Ile	Asn	Glu	Cys	Ile	Pro	Tyr	Asn	Cys	Leu
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Ser	Asn	Pro	Glu	Val	Glu	Val	Leu	Gly	Gly	Glu	Arg	Ile	Glu	Thr	Gly
			20					25					30		
Tyr	Thr	Pro	Ile	Asp	Ile	Ser	Leu	Ser	Leu	Thr	Gln	Phe	Leu	Leu	Ser
		35					40				45				
Glu	Phe	Val	Pro	Gly	Ala	Gly	Phe	Val	Leu	Gly	Leu	Val	Asp	Ile	Ile
	50					55				60					
Trp	Gly	Ile	Phe	Gly	Pro	Ser	Gln	Trp	Asp	Ala	Phe	Pro	Val	Gln	Ile
65					70				75						80
Glu	Gln	Leu	Ile	Asn	Gln	Arg	Ile	Glu	Glu	Phe	Ala	Arg	Asn	Gln	Ala
				85				90					95		
Ile	Ser	Arg	Leu	Glu	Gly	Leu	Ser	Asn	Leu	Tyr	Gln	Ile	Tyr	Ala	Glu

			100					105					110		
Ser	Phe	Arg	Glu	Trp	Glu	Ala	Asp	Pro	Thr	Asn	Pro	Ala	Leu	Arg	Glu
		115					120					125			
Glu	Met	Arg	Ile	Gln	Phe	Asn	Asp	Met	Asn	Ser	Ala	Leu	Thr	Thr	Ala
	130					135					140				
Ile	Pro	Leu	Leu	Ala	Val	Gln	Asn	Tyr	Gln	Val	Pro	Leu	Leu	Ser	Val
145					150					155					160
Tyr	Val	Gln	Ala	Ala	Asn	Leu	His	Leu	Ser	Val	Leu	Arg	Asp	Val	Ser
				165					170					175	
Val	Phe	Gly	Gln	Arg	Trp	Gly	Phe	Asp	Ala	Ala	Thr	Ile	Asn	Ser	Arg
			180					185					190		
Tyr	Asn	Asp	Leu	Thr	Arg	Leu	Ile	Gly	Asn	Tyr	Thr	Asp	Tyr	Ala	Val
		195					200					205			
Arg	Trp	Tyr	Asn	Thr	Gly	Leu	Glu	Arg	Val	Trp	Gly	Pro	Asp	Ser	Arg
	210					215					220				
Asp	Trp	Val	Arg	Tyr	Asn	Gln	Phe	Arg	Arg	Glu	Leu	Thr	Leu	Thr	Val
225					230					235					240
Leu	Asp	Ile	Val	Ala	Leu	Phe	Ser	Asn	Tyr	Asp	Ser	Arg	Arg	Tyr	Pro
				245					250					255	
Ile	Arg	Thr	Val	Ser	Gln	Leu	Thr	Arg	Glu	Ile	Tyr	Thr	Asn	Pro	Val
			260					265					270		
Leu	Glu	Asn	Phe	Asp	Gly	Ser	Phe	Arg	Gly	Met	Ala	Gln	Arg	Ile	Glu
		275					280					285			
Gln	Asn	Ile	Arg	Gln	Pro	His	Leu	Met	Asp	Ile	Leu	Asn	Ser	Ile	Thr
	290					295					300				
Ile	Tyr	Thr	Asp	Val	His	Arg	Gly	Phe	Asn	Tyr	Trp	Ser	Gly	His	Gln
305				310					315						320
Ile	Thr	Ala	Ser	Pro	Val	Gly	Phe	Ser	Gly	Pro	Glu	Phe	Ala	Phe	Pro
				325					330					335	
Leu	Phe	Gly	Asn	Ala	Gly	Asn	Ala	Ala	Pro	Pro	Val	Leu	Val	Ser	Leu
			340					345					350		
Thr	Gly	Leu	Gly	Ile	Phe	Arg	Thr	Leu	Ser	Ser	Pro	Leu	Tyr	Arg	Arg
		355					360					365			
Ile	Ile	Leu	Gly	Ser	Gly	Pro	Asn	Asn	Gln	Glu	Leu	Phe	Val	Leu	Asp
	370					375					380				
Gly	Thr	Glu	Phe	Ser	Phe	Ala	Ser	Leu	Thr	Thr	Asn	Leu	Pro	Ser	Thr
385				390						395					400
Ile	Tyr	Arg	Gln	Arg	Gly	Thr	Val	Asp	Ser	Leu	Asp	Val	Ile	Pro	Pro
				405					410					415	
Gln	Asp	Asn	Ser	Val	Pro	Pro	Arg	Ala	Gly	Phe	Ser	His	Arg	Leu	Ser
		420						425					430		
His	Val	Thr	Met	Leu	Ser	Gln	Ala	Ala	Gly	Ala	Val	Tyr	Thr	Leu	Arg
		435					440					445			
Ala	Pro	Thr	Phe	Ser	Trp	Gln									

Gln	Ser	Gly	Ser	Phe	Arg	Thr	Val	Gly	Phe	Thr	Thr	Pro	Phe	Asn	Phe	
				565					570					575		
Ser	Asn	Gly	Ser	Ser	Val	Phe	Thr	Leu	Ser	Ala	His	Val	Phe	Asn	Ser	
			580					585					590			
Gly	Asn	Glu	Val	Tyr	Ile	Asp	Arg	Ile	Glu	Phe	Val	Pro	Ala	Glu	Val	
	595					600						605				
Thr	Phe	Glu	Ala	Glu	Tyr	Asp	Leu	Glu	Arg	Ala	Gln	Lys	Ala	Val	Asn	
	610					615					620					
Glu	Leu	Phe	Thr	Ser	Ser	Asn	Gln	Ile	Gly	Leu	Lys	Thr	Asp	Val	Thr	
625					630					635					640	
Asp	Tyr	His	Ile	Asp	Gln	Val	Ser	Asn	Leu	Val	Glu	Cys	Leu	Ser	Asp	
				645					650					655		
Glu	Phe	Cys	Leu	Asp	Glu	Lys	Gln	Glu	Leu	Ser	Glu	Lys	Val	Lys	His	
			660					665					670			
Ala	Lys	Arg	Leu	Ser	Asp	Glu	Arg	Asn	Leu	Leu	Gln	Asp	Pro	Asn	Phe	
			675				680					685				
Arg	Gly	Ile	Asn	Arg	Gln	Leu	Asp	Arg	Gly	Trp	Arg	Gly	Ser	Thr	Asp	
	690					695					700					
Ile	Thr	Ile	Gln	Gly	Gly	Asp	Asp	Val	Phe	Lys	Glu	Asn	Tyr	Val	Thr	
705					710					715					720	
Leu	Leu	Gly	Thr	Phe	Asp	Glu	Cys	Tyr	Pro	Thr	Tyr	Leu	Tyr	Gln	Lys	
				725					730					735		
Ile	Asp	Glu	Ser	Lys	Leu	Lys	Ala	Tyr	Thr	Arg	Tyr	Gln	Leu	Arg	Gly	
			740					745					750			
Tyr	Ile	Glu	Asp	Ser	Gln	Asp	Leu	Glu	Ile	Tyr	Leu	Ile	Arg	Tyr	Asn	
	755					760						765				
Ala	Lys	His	Glu	Thr	Val	Asn	Val	Pro	Gly	Thr	Gly	Ser	Leu	Trp	Pro	
	770					775					780					
Leu	Ser	Ala	Gln	Ser	Pro	Ile	Gly	Lys	Cys	Gly	Glu	Pro	Asn	Arg	Cys	
785					790					795					800	
Ala	Pro	His	Leu	Glu	Trp	Asn	Pro	Asp	Leu	Asp	Cys	Ser	Cys	Arg	Asp	
			805						810					815		
Gly	Glu	Lys	Cys	Ala	His	His	Ser	His	His	Phe	Ser	Leu	Asp	Ile	Asp	
			820					825					830			
Val	Gly	Cys	Thr	Asp	Leu	Asn	Glu	Asp	Leu	Gly	Val	Trp	Val	Ile	Phe	
			835				840					845				
Lys	Ile	Lys	Thr	Gln	Asp	Gly	His	Ala	Arg	Leu	Gly	Asn	Leu	Glu	Phe	
	850					855					860					
Leu	Glu	Glu	Lys	Pro	Leu	Val	Gly	Glu	Ala	Leu	Ala	Arg	Val	Lys	Arg	
865					870					875					880	
Ala	Glu	Lys	Lys	Trp	Arg	Asp	Lys	Arg	Glu	Lys	Leu	Glu	Trp	Glu	Thr	
				885					890					895		
Asn	Ile	Val	Tyr	Lys	Glu	Ala	Lys	Glu	Ser	Val	Asp	Ala	Leu	Phe	Val	
			900					905					910			
Asn	Ser	Gln	Tyr	Asp	Gln	Leu	Gln	Ala	Asp	Thr	Asn	Ile	Ala	Met	Ile	
		915					920					925				
His	Ala	Ala	Asp	Lys	Arg	Val	His	Ser	Ile	Arg	Glu	Ala	Tyr	Leu	Pro	
	930					935					940					
Glu	Leu	Ser	Val	Ile	Pro	Gly	Val	Asn	Ala	Ala	Ile	Phe	Glu	Glu	Leu	
945					950					955					960	
Glu	Gly	Arg	Ile	Phe	Thr	Ala	Phe	Ser	Leu	Tyr	Asp	Ala	Arg	Asn	Val	
				965					970					975		
Ile	Lys	Asn	Gly	Asp	Phe	Asn	Asn	Gly	Leu	Ser	Cys	Trp	Asn	Val	Lys	
			980					985					990			
Gly	His	Val	Asp	Val	Glu	Glu	Gln	Asn	Asn	Gln	Arg	Ser	Val	Leu	Val	
		995					1000					1005				
Val	Pro	Glu	Trp	Glu	Ala	Glu	Val	Ser	Gln	Glu	Val	Arg	Val	Cys	Pro	

1010	1015	1020
Gly Arg Gly Tyr Ile	Leu Arg Val Thr Ala Tyr Lys Glu Gly Tyr Gly	
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Glu Gly Cys Val Thr	Ile His Glu Ile Glu Asn Asn Thr Asp Glu Leu	
	1045	1050 1055
Lys Phe Ser Asn Cys Val	Glu Glu Glu Ile Tyr Pro Asn Asn Thr Val	
	1060	1065 1070
Thr Cys Asn Asp Tyr Thr	Val Asn Gln Glu Glu Tyr Gly Gly Ala Tyr	
	1075	1080 1085
Thr Ser Arg Asn Arg Gly	Tyr Asn Glu Ala Pro Ser Val Pro Ala Asp	
	1090	1095 1100
Tyr Ala Ser Val Tyr	Glu Lys Ser Tyr Thr Asp Gly Arg Arg Glu	
1105	1110	1115 1120
Asn Pro Cys Glu Phe	Asn Arg Gly Tyr Arg Asp Tyr Thr Pro Leu Pro	
	1125	1130 1135
Val Gly Tyr Val Thr	Lys Glu Leu Glu Tyr Phe Pro Glu Thr Asp Lys	
	1140	1145 1150
Val Trp Ile Glu Ile Gly	Glu Thr Glu Gly Thr Phe Ile Val Asp Ser	
	1155	1160 1165
Val Glu Leu Leu Leu Met	Glu Glu	
1170	1175	

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 <211> 1178
 <212> PRT
 <213> Bacillus thuringiensis

<400> 6

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Tyr Thr Pro Ile Asp Ile Ser Leu Ser Leu Thr Gln Phe Leu Leu Ser	
35 40 45	
Glu Phe Val Pro Gly Ala Gly Phe Val Leu Gly Leu Val Asp Ile Ile	
50 55 60	
Trp Gly Ile Phe Gly Pro Ser Gln Trp Asp Ala Phe Leu Val Gln Ile	
65 70 75 80	
Glu Gln Leu Ile Asn Gln Arg Ile Glu Glu Phe Ala Arg Asn Gln Ala	
85 90 95	
Ile Ser Arg Leu Glu Gly Leu Ser Asn Leu Tyr Gln Ile Tyr Ala Glu	
100 105 110	
Ser Phe Arg Glu Trp Glu Ala Asp Pro Thr Asn Pro Ala Leu Arg Glu	
115 120 125	
Glu Met Arg Ile Gln Phe Asn Asp Met Asn Ser Ala Leu Thr Thr Ala	
130 135 140	
Ile Pro Leu Phe Ala Val Gln Asn Tyr Gln Val Pro Leu Leu Ser Val	
145 150 155 160	
Tyr Val Gln Ala Ala Asn Leu His Leu Ser Val Leu Arg Asp Val Ser	
165 170 175	
Val Phe Gly Gln Arg Trp Gly Phe Asp Ala Ala Thr Ile Asn Ser Arg	
180 185 190	
Tyr Asn Asp Leu Thr Arg Leu Ile Gly Asn Tyr Thr Asp Tyr Ala Val	
195 200 205	
Arg Trp Tyr Asn Thr Gly Leu Glu Arg Val Trp Gly Pro Asp Ser Arg	
210 215 220	

Asp	Trp	Val	Arg	Tyr	Asn	Gln	Phe	Arg	Arg	Glu	Leu	Thr	Leu	Thr	Val
225					230					235					240
Leu	Asp	Ile	Val	Ala	Leu	Phe	Pro	Asn	Tyr	Asp	Ser	Arg	Arg	Tyr	Pro
				245					250					255	
Ile	Arg	Thr	Val	Ser	Gln	Leu	Thr	Arg	Glu	Ile	Tyr	Thr	Asn	Pro	Val
			260					265					270		
Leu	Glu	Asn	Phe	Asp	Gly	Ser	Phe	Arg	Gly	Ser	Ala	Gln	Gly	Ile	Glu
		275					280					285			
Arg	Ser	Ile	Arg	Ser	Pro	His	Leu	Met	Asp	Ile	Leu	Asn	Ser	Ile	Thr
	290					295					300				
Ile	Tyr	Thr	Asp	Ala	His	Arg	Gly	Tyr	Tyr	Tyr	Trp	Ser	Gly	His	Gln
305					310					315					320
Ile	Met	Ala	Ser	Pro	Val	Gly	Phe	Ser	Gly	Pro	Glu	Phe	Thr	Phe	Pro
				325					330					335	
Leu	Tyr	Gly	Thr	Met	Gly	Asn	Ala	Ala	Pro	Gln	Gln	Arg	Ile	Val	Ala
			340					345						350	
Gln	Leu	Gly	Gln	Gly	Val	Tyr	Arg	Thr	Leu	Ser	Ser	Thr	Leu	Tyr	Arg
		355					360					365			
Arg	Pro	Phe	Asn	Ile	Gly	Ile	Asn	Asn	Gln	Gln	Leu	Ser	Val	Leu	Asp
	370					375					380				
Gly	Thr	Glu	Phe	Ala	Tyr	Gly	Thr	Ser	Ser	Asn	Leu	Pro	Ser	Ala	Val
385					390					395					400
Tyr	Arg	Lys	Ser	Gly	Thr	Val	Asp	Ser	Leu	Asp	Glu	Ile	Pro	Pro	Gln
				405					410					415	
Asn	Asn	Asn	Val	Pro	Pro	Arg	Gln	Gly	Phe	Ser	His	Arg	Leu	Ser	His
			420					425					430		
Val	Ser	Met	Phe	Arg	Ser	Gly	Phe	Ser	Asn	Ser	Ser	Val	Ser	Ile	Ile
		435					440					445			
Arg	Ala	Pro	Met	Phe	Ser	Trp	Ile	His	Arg	Ser	Ala	Glu	Phe	Asn	Asn
	450					455					460				
Ile	Ile	Ala	Ser	Asp	Ser	Ile	Thr	Gln	Ile	Pro	Ala	Val	Lys	Gly	Asn
465					470					475					480
Phe	Leu	Phe	Asn	Gly	Ser	Val	Ile	Ser	Gly	Pro	Gly	Phe	Thr	Gly	Gly
				485					490					495	
Asp	Leu	Val	Arg	Leu	Asn	Ser	Ser	Gly	Asn	Asn	Ile	Gln	Asn	Arg	Gly
			500					505					510		
Tyr	Ile	Glu	Val	Pro	Ile	His	Phe	Pro	Ser	Thr	Ser	Thr	Arg	Tyr	Arg
		515					520					525			
Val	Arg	Val	Arg	Tyr	Ala	Ser	Val	Thr	Pro	Ile	His	Leu	Asn	Val	Asn
	530					535					540				
Trp	Gly	Asn	Ser	Ser	Ile	Phe	Ser	Asn	Thr	Val	Pro	Ala	Thr	Ala	Thr
545					550					555					560
Ser	Leu	Asp	Asn	Leu	Gln	Ser	Ser	Asp	Phe	Gly	Tyr	Phe	Glu	Ser	Ala
				565					570					575	
Asn	Ala	Phe	Thr	Ser	Ser	Leu	Gly	Asn	Ile	Val	Gly	Val	Arg	Asn	Phe
			580					585					590		
Ser	Gly	Thr	Ala	Gly	Val	Ile	Ile	Asp	Arg	Phe	Glu	Phe	Ile	Pro	Val
		595					600					605			
Thr	Ala	Thr	Leu	Glu	Ala	Glu	Tyr	Asn	Leu	Glu	Arg	Ala	Gln	Lys	Ala
	610					615					620				
Val	Asn	Ala	Leu	Phe	Thr	Ser	Thr	Asn	Gln	Leu	Gly	Leu	Lys	Thr	Asn
625					630					635					640
Val	Thr	Asp	Tyr	His	Ile	Asp	Gln	Val	Ser	Asn	Leu	Val	Thr	Tyr	Leu
				645					650					655	
Ser	Asp	Glu	Phe	Cys	Leu	Asp	Glu	Lys	Arg	Glu	Leu	Ser	Glu	Lys	Val
			660					665					670		
Lys	His	Ala	Lys	Arg	Leu	Ser	Asp	Glu	Arg	Asn	Leu	Leu	Gln	Asp	Ser

Leu Pro Val Gly Tyr Val Thr Lys Glu Leu Glu Tyr Phe Pro Glu Thr
 1140 1145 1150
 Asp Lys Val Trp Ile Glu Ile Gly Glu Thr Glu Gly Thr Phe Ile Val
 1155 1160 1165
 Asp Ser Val Glu Leu Leu Leu Met Glu Glu
 1170 1175

<210> 7

<211> 719

<212> PRT

<213> *Bacillus thuringiensis*

<400> 7

Met Lys Leu Lys Asn Gln Asp Lys His Gln Ser Phe Ser Ser Asn Ala
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 Lys Val Asp Lys Ile Ser Thr Asp Ser Leu Lys Asn Glu Thr Asp Ile
 20 25 30
 Glu Leu Gln Asn Ile Asn His Glu Asp Cys Leu Lys Met Ser Glu Tyr
 35 40 45
 Glu Asn Val Glu Pro Phe Val Ser Ala Ser Thr Ile Gln Thr Gly Ile
 50 55 60
 Gly Ile Ala Gly Lys Ile Leu Gly Thr Leu Gly Val Pro Phe Ala Gly
 65 70 75 80
 Gln Val Ala Ser Leu Tyr Ser Phe Ile Leu Gly Glu Leu Trp Pro Lys
 85 90 95
 Gly Lys Asn Gln Trp Glu Ile Phe Met Glu His Val Glu Glu Ile Ile
 100 105 110
 Asn Gln Lys Ile Ser Thr Tyr Ala Arg Asn Lys Ala Leu Thr Asp Leu
 115 120 125
 Lys Gly Leu Gly Asp Ala Leu Ala Val Tyr His Asp Ser Leu Glu Ser
 130 135 140
 Trp Val Gly Asn Arg Asn Asn Thr Arg Ala Arg Ser Val Val Lys Ser
 145 150 155 160
 Gln Tyr Ile Ala Leu Glu Leu Met Phe Val Gln Lys Leu Pro Ser Phe
 165 170 175
 Ala Val Ser Gly Glu Glu Val Pro Leu Leu Pro Ile Tyr Ala Gln Ala
 180 185 190
 Ala Asn Leu His Leu Leu Leu Leu Arg Asp Ala Ser Ile Phe Gly Lys
 195 200 205
 Glu Trp Gly Leu Ser Ser Ser Glu Ile Ser Thr Phe Tyr Asn Arg Gln
 210 215 220
 Val Glu Arg Ala Gly Asp Tyr Ser Asp His Cys Val Lys Trp Tyr Ser
 225 230 235 240
 Thr Gly Leu Asn Asn Leu Arg Gly Thr Asn Ala Glu Ser Trp Val Arg
 245 250 255
 Tyr Asn Gln Phe Arg Arg Asp Met Thr Leu Met Val Leu Asp Leu Val
 260 265 270
 Ala Leu Phe Pro Ser Tyr Asp Thr Gln Met Tyr Pro Ile Lys Thr Thr
 275 280 285
 Ala Gln Leu Thr Arg Glu Val Tyr Thr Asp Ala Ile Gly Thr Val His
 290 295 300
 Pro His Pro Ser Phe Thr Ser Thr Thr Trp Tyr Asn Asn Asn Ala Pro
 305 310 315 320
 Ser Phe Ser Ala Ile Glu Ala Ala Val Val Arg Asn Pro His Leu Leu
 325 330 335
 Asp Phe Leu Glu Gln Val Thr Ile Tyr Ser Leu Leu Ser Arg Trp Ser

				340						345					350				
Asn	Thr	Gln	Tyr	Met	Asn	Met	Trp	Gly	Gly	His	Lys	Leu	Glu	Phe	Arg				
		355						360					365						
Thr	Ile	Gly	Gly	Thr	Leu	Asn	Ile	Ser	Thr	Gln	Gly	Ser	Thr	Asn	Thr				
		370					375					380							
Ser	Ile	Asn	Pro	Val	Thr	Leu	Pro	Phe	Thr	Ser	Arg	Asp	Val	Tyr	Arg				
385						390				395					400				
Thr	Glu	Ser	Leu	Ala	Gly	Leu	Asn	Leu	Phe	Leu	Thr	Gln	Pro	Val	Asn				
				405					410						415				
Gly	Val	Pro	Arg	Val	Asp	Phe	His	Trp	Lys	Phe	Val	Thr	His	Pro	Ile				
			420					425						430					
Ala	Ser	Asp	Asn	Phe	Tyr	Tyr	Pro	Gly	Tyr	Ala	Gly	Ile	Gly	Thr	Gln				
		435					440					445							
Leu	Gln	Asp	Ser	Glu	Asn	Glu	Leu	Pro	Pro	Glu	Ala	Thr	Gly	Gln	Pro				
		450				455					460								
Asn	Tyr	Glu	Ser	Tyr	Ser	His	Arg	Leu	Ser	His	Ile	Gly	Leu	Ile	Ser				
465					470					475					480				
Ala	Ser	His	Val	Lys	Ala	Leu	Val	Tyr	Ser	Trp	Thr	His	Arg	Ser	Ala				
				485				490						495					
Asp	Arg	Thr	Asn	Thr	Ile	Glu	Pro	Asn	Ser	Ile	Thr	Gln	Ile	Pro	Leu				
			500					505				510							
Val	Lys	Ala	Phe	Asn	Leu	Ser	Ser	Gly	Ala	Ala	Val	Val	Arg	Gly	Pro				
		515					520					525							
Gly	Phe	Thr	Gly	Gly	Asp	Ile	Leu	Arg	Arg	Thr	Asn	Thr	Gly	Thr	Phe				
		530				535					540								
Gly	Asp	Ile	Arg	Val	Asn	Ile	Asn	Pro	Pro	Phe	Ala	Gln	Arg	Tyr	Arg				
545					550					555					560				
Val	Arg	Ile	Arg	Tyr	Ala	Ser	Thr	Thr	Asp	Leu	Gln	Phe	His	Thr	Ser				
				565				570						575					
Ile	Asn	Gly	Lys	Ala	Ile	Asn	Gln	Gly	Asn	Phe	Ser	Ala	Thr	Met	Asn				
			580					585					590						
Arg	Gly	Glu	Asp	Leu	Asp	Tyr	Lys	Thr	Phe	Arg	Thr	Val	Gly	Phe	Thr				
		595					600					605							
Thr	Pro	Phe	Ser	Phe	Leu	Asp	Val	Gln	Ser	Thr	Phe	Thr	Ile	Gly	Ala				
		610				615					620								
Trp	Asn	Phe	Ser	Ser	Gly	Asn	Glu	Val	Tyr	Ile	Asp	Arg	Ile	Glu	Phe				
625					630					635					640				
Val	Pro	Val	Glu	Val	Thr	Tyr	Glu	Ala	Glu	Tyr	Asp	Phe	Glu	Lys	Ala				
				645					650					655					
Gln	Glu	Lys	Val	Thr	Ala	Leu	Phe	Thr	Ser	Thr	Asn	Pro	Arg	Gly	Leu				
			660					665					670						
Lys	Thr	Asp	Val	Lys	Asp	Tyr	His	Ile	Asp	Gln	Val	Ser	Asn	Leu	Val				
		675					680					685							
Glu	Ser	Leu	Ser	Asp	Glu	Phe	Tyr	Leu	Asp	Glu	Lys	Arg	Glu	Leu	Phe				
		690				695					700								
Glu	Ile	Val	Lys	Tyr	Ala	Lys	Gln	Leu	His	Ile	Glu	Arg	Asn	Met					
705					710					715									

<210> 8

<211> 652

<212> PRT

<213> Bacillus thuringiensis

<400> 8

Met	Ile	Arg	Lys	Gly	Gly	Arg	Lys	Met	Asn	Pro	Asn	Asn	Arg	Ser	Glu
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His	Asp	Thr	Ile	Lys	Thr	Thr	Glu	Asn	Asn	Glu	Val	Pro	Thr	Asn	His
			20					25					30		
Val	Gln	Tyr	Pro	Leu	Ala	Glu	Thr	Pro	Asn	Pro	Thr	Leu	Glu	Asp	Leu
		35					40					45			
Asn	Tyr	Lys	Glu	Phe	Leu	Arg	Met	Thr	Ala	Asp	Asn	Asn	Thr	Glu	Ala
		50				55				60					
Leu	Asp	Ser	Ser	Thr	Thr	Lys	Asp	Val	Ile	Gln	Lys	Gly	Ile	Ser	Val
65					70					75				80	
Val	Gly	Asp	Leu	Leu	Gly	Val	Val	Gly	Phe	Pro	Phe	Gly	Gly	Ala	Leu
			85					90						95	
Val	Ser	Phe	Tyr	Thr	Asn	Phe	Leu	Asn	Thr	Ile	Trp	Pro	Ser	Glu	Asp
			100					105					110		
Pro	Trp	Lys	Ala	Phe	Met	Glu	Gln	Val	Glu	Ala	Leu	Met	Asp	Gln	Lys
		115				120						125			
Ile	Ala	Asp	Tyr	Ala	Lys	Asn	Lys	Ala	Leu	Ala	Glu	Leu	Gln	Gly	Leu
	130					135					140				
Gln	Asn	Asn	Val	Glu	Asp	Tyr	Val	Ser	Ala	Leu	Ser	Ser	Trp	Gln	Lys
145					150					155					160
Asn	Pro	Val	Ser	Ser	Arg	Asn	Pro	His	Ser	Gln	Gly	Arg	Ile	Arg	Glu
				165				170					175		
Leu	Phe	Ser	Gln	Ala	Glu	Ser	His	Phe	Arg	Asn	Ser	Met	Pro	Ser	Phe
			180					185					190		
Ala	Ile	Ser	Gly	Tyr	Glu	Val	Leu	Phe	Leu	Thr	Thr	Tyr	Ala	Gln	Ala
		195					200					205			
Ala	Asn	Thr	His	Leu	Phe	Leu	Leu	Lys	Asp	Ala	Gln	Ile	Tyr	Gly	Glu
	210					215					220				
Glu	Trp	Gly	Tyr	Glu	Lys	Glu	Asp	Ile	Ala	Glu	Phe	Tyr	Lys	Arg	Gln
225					230					235					240
Leu	Lys	Leu	Thr	Gln	Glu	Tyr	Thr	Asp	His	Cys	Val	Lys	Trp	Tyr	Asn
				245				250					255		
Val	Gly	Leu	Asp	Lys	Leu	Arg	Gly	Ser	Ser	Tyr	Glu	Ser	Trp	Val	Asn
			260					265					270		
Phe	Asn	Arg	Tyr	Arg	Arg	Glu	Met	Thr	Leu	Thr	Val	Leu	Asp	Leu	Ile
		275					280					285			
Ala	Leu	Phe	Pro	Leu	Tyr	Asp	Val	Arg	Leu	Tyr	Pro	Lys	Glu	Val	Lys
	290					295					300				
Thr	Glu	Leu	Thr	Arg	Asp	Val	Leu	Thr	Asp	Pro	Ile	Val	Gly	Val	Asn
305					310					315					320
Asn	Leu	Arg	Gly	Tyr	Gly	Thr	Thr	Phe	Ser	Asn	Ile	Glu	Asn	Tyr	Ile
				325				330					335		
Arg	Lys	Pro	His	Leu	Phe	Asp	Tyr	Leu	His	Arg	Ile	Gln	Phe	His	Thr
			340					345					350		
Arg	Phe	Gln	Pro	Gly	Tyr	Tyr	Gly	Asn	Asp	Ser	Phe	Asn	Tyr	Trp	Ser
		355					360					365			
Gly	Asn	Tyr	Val	Ser	Thr	Arg	Pro	Ser	Ile	Gly	Ser	Asn	Asp	Ile	Ile
	370					375					380				
Thr	Ser	Pro	Phe	Tyr	Gly	Asn	Lys	Ser	Ser	Glu	Pro	Val	Gln	Asn	Leu
385					390					395					400
Glu	Phe	Asn	Gly	Glu	Lys	Val	Tyr	Arg	Ala	Val	Ala	Asn	Thr	Asn	Leu
				405				410					415		
Ala	Val	Trp	Pro	Ser	Ala	Val	Tyr	Ser	Gly	Val	Thr	Lys	Val	Glu	Phe
			420					425					430		
Ser	Gln	Tyr	Asn	Asp	Gln	Thr	Asp	Glu	Ala	Ser	Thr	Gln	Thr	Tyr	Asp
		435					440					445			
Ser	Lys	Arg	Asn	Val	Gly	Ala	Val	Ser	Trp	Asp	Ser	Ile	Asp	Gln	Leu
	450					455				460					
Pro	Pro	Glu	Thr	Thr	Asp	Glu	Pro	Leu	Glu	Lys	Gly	Tyr	Ser	His	Gln

465		470		475		480									
Leu	Asn	Tyr	Val	Met	Cys	Phe	Leu	Met	Gln	Gly	Ser	Arg	Gly	Thr	Ile
				485					490					495	
Pro	Val	Leu	Thr	Trp	Thr	His	Lys	Ser	Val	Asp	Phe	Phe	Asn	Met	Ile
			500					505					510		
Asp	Ser	Lys	Lys	Ile	Thr	Gln	Leu	Pro	Leu	Val	Lys	Ala	Tyr	Lys	Leu
		515					520					525			
Gln	Ser	Gly	Ala	Ser	Val	Val	Ala	Gly	Pro	Arg	Phe	Thr	Gly	Gly	Asp
	530					535					540				
Ile	Ile	Gln	Cys	Thr	Glu	Asn	Gly	Ser	Ala	Ala	Thr	Ile	Tyr	Val	Thr
545					550					555					560
Pro	Asp	Val	Ser	Tyr	Ser	Gln	Lys	Tyr	Arg	Ala	Arg	Ile	His	Tyr	Ala
				565					570					575	
Ser	Thr	Ser	Gln	Ile	Thr	Phe	Thr	Leu	Ser	Leu	Asp	Gly	Ala	Pro	Phe
			580					585					590		
Asn	Gln	Tyr	Tyr	Phe	Asp	Lys	Thr	Ile	Asn	Lys	Gly	Asp	Thr	Leu	Thr
		595					600					605			
Tyr	Asn	Ser	Phe	Asn	Leu	Ala	Ser	Phe	Ser	Thr	Pro	Phe	Glu	Leu	Ser
	610					615					620				
Gly	Asn	Asn	Leu	Gln	Ile	Gly	Val	Thr	Gly	Leu	Ser	Ala	Gly	Asp	Lys
625				630						635					640
Val	Tyr	Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Val	Asn				
				645					650						

<210> 9

<211> 659

<212> PRT

<213> Bacillus thuringiensis

<400> 9

Met	Ile	Arg	Met	Gly	Gly	Arg	Lys	Met	Asn	Pro	Asn	Asn	Arg	Ser	Glu
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Tyr	Asp	Thr	Ile	Lys	Val	Thr	Pro	Asn	Ser	Glu	Leu	Pro	Thr	Asn	His
			20					25					30		
Asn	Gln	Tyr	Pro	Leu	Ala	Asp	Asn	Pro	Asn	Ser	Thr	Leu	Glu	Glu	Leu
		35					40					45			
Asn	Tyr	Lys	Glu	Phe	Leu	Arg	Met	Thr	Ala	Asp	Asn	Ser	Thr	Glu	Val
	50					55					60				
Leu	Asp	Ser	Ser	Thr	Val	Lys	Asp	Ala	Val	Gly	Thr	Gly	Ile	Ser	Val
65					70					75				80	
Val	Gly	Gln	Ile	Leu	Gly	Val	Val	Gly	Val	Pro	Phe	Ala	Gly	Ala	Leu
			85					90						95	
Thr	Ser	Phe	Tyr	Gln	Ser	Phe	Leu	Asn	Ala	Ile	Trp	Pro	Ser	Asp	Ala
			100					105					110		
Asp	Pro	Trp	Lys	Ala	Phe	Met	Ala	Gln	Val	Glu	Val	Leu	Ile	Asp	Lys
		115					120						125		
Lys	Ile	Glu	Glu	Tyr	Ala	Lys	Ser	Lys	Ala	Leu	Ala	Glu	Leu	Gln	Gly
	130					135						140			
Leu	Gln	Asn	Asn	Phe	Glu	Asp	Tyr	Val	Asn	Ala	Leu	Asp	Ser	Trp	Lys
145				150						155					160
Lys	Ala	Pro	Val	Asn	Leu	Arg	Ser	Arg	Arg	Ser	Gln	Asp	Arg	Ile	Arg
				165					170					175	
Glu	Leu	Phe	Ser	Gln	Ala	Glu	Ser	His	Phe	Arg	Asn	Ser	Met	Pro	Ser
			180					185					190		
Phe	Ala	Val	Ser	Lys	Phe	Glu	Val	Leu	Phe	Leu	Pro	Thr	Tyr	Ala	Gln
		195					200						205		

Ala	Ala	Asn	Thr	His	Leu	Leu	Leu	Leu	Lys	Asp	Ala	Gln	Val	Phe	Gly
	210					215					220				
Glu	Glu	Trp	Gly	Tyr	Ser	Ser	Glu	Asp	Ile	Ala	Glu	Phe	Tyr	Gln	Arg
225					230					235					240
Gln	Leu	Lys	Leu	Thr	Gln	Gln	Tyr	Thr	Asp	His	Cys	Val	Asn	Trp	Tyr
				245					250					255	
Asn	Val	Gly	Leu	Asn	Ser	Leu	Arg	Gly	Ser	Thr	Tyr	Asp	Ala	Trp	Val
		260						265					270		
Lys	Phe	Asn	Arg	Phe	Arg	Arg	Glu	Met	Thr	Leu	Thr	Val	Leu	Asp	Leu
		275					280					285			
Ile	Val	Leu	Phe	Pro	Phe	Tyr	Asp	Val	Arg	Leu	Tyr	Ser	Lys	Gly	Val
	290					295					300				
Lys	Thr	Glu	Leu	Thr	Arg	Asp	Ile	Phe	Thr	Asp	Pro	Ile	Phe	Thr	Leu
305					310					315					320
Asn	Ala	Leu	Gln	Glu	Tyr	Gly	Pro	Thr	Phe	Ser	Ser	Ile	Glu	Asn	Ser
			325						330					335	
Ile	Arg	Lys	Pro	His	Leu	Phe	Asp	Tyr	Leu	Arg	Gly	Ile	Glu	Phe	His
			340					345					350		
Thr	Arg	Leu	Arg	Pro	Gly	Tyr	Ser	Gly	Lys	Asp	Ser	Phe	Asn	Tyr	Trp
		355					360					365			
Ser	Gly	Asn	Tyr	Val	Glu	Thr	Arg	Pro	Ser	Ile	Gly	Ser	Asn	Asp	Thr
	370					375					380				
Ile	Thr	Ser	Pro	Phe	Tyr	Gly	Asp	Lys	Ser	Ile	Glu	Pro	Ile	Gln	Lys
385					390					395					400
Leu	Ser	Phe	Asp	Gly	Gln	Lys	Val	Tyr	Arg	Thr	Ile	Ala	Asn	Thr	Asp
			405						410					415	
Ile	Ala	Ala	Phe	Pro	Asp	Gly	Lys	Ile	Tyr	Phe	Gly	Val	Thr	Lys	Val
		420						425					430		
Asp	Phe	Ser	Gln	Tyr	Asp	Asp	Gln	Lys	Asn	Glu	Thr	Ser	Thr	Gln	Thr
	435						440					445			
Tyr	Asp	Ser	Lys	Arg	Tyr	Asn	Gly	Tyr	Leu	Gly	Ala	Gln	Asp	Ser	Ile
	450					455					460				
Asp	Gln	Leu	Pro	Pro	Glu	Thr	Thr	Asp	Glu	Pro	Leu	Glu	Lys	Ala	Tyr
465					470					475					480
Ser	His	Gln	Leu	Asn	Tyr	Ala	Glu	Cys	Phe	Leu	Met	Gln	Asp	Arg	Arg
			485						490					495	
Gly	Thr	Ile	Pro	Phe	Phe	Thr	Trp	Thr	His	Arg	Ser	Val	Asp	Phe	Phe
			500					505					510		
Asn	Thr	Ile	Asp	Ala	Glu	Lys	Ile	Thr	Gln	Leu	Pro	Val	Val	Lys	Ala
		515					520					525			
Tyr	Ala	Leu	Ser	Ser	Gly	Ala	Ser	Ile	Ile	Glu	Gly	Pro	Gly	Phe	Thr
	530					535					540				
Gly	Gly	Asn	Leu	Leu	Phe	Leu	Lys	Glu	Ser	Ser	Asn	Ser	Ile	Ala	Lys
545					550					555					560
Phe	Lys	Val	Thr	Leu	Asn	Ser	Ala	Ala	Leu	Leu	Gln	Arg	Tyr	Arg	Val
			565						570					575	
Arg	Ile	Arg	Tyr	Ala	Ser	Thr	Thr	Asn	Leu	Arg	Leu	Phe	Val	Gln	Asn
			580					585					590		
Ser	Asn	Asn	Asp	Phe	Leu	Val	Ile	Tyr	Ile	Asn	Lys	Thr	Met	Asn	Ile
		595					600					605			
Asp	Gly	Asp	Leu	Thr	Tyr	Gln	Thr	Phe	Asp	Phe	Ala	Thr	Ser	Asn	Ser
	610					615					620				
Asn	Met	Gly	Phe	Ser	Gly	Asp	Thr	Asn	Asp	Phe	Ile	Ile	Gly	Ala	Glu
625					630					635					640
Ser	Phe	Val	Ser	Asn	Glu	Lys	Ile	Tyr	Ile	Asp	Lys	Ile	Glu	Phe	Ile
				645					650					655	
Pro	Val	Gln													

<210> 10
 <211> 1180
 <212> PRT
 <213> *Bacillus thuringiensis*

<400> 10

Met	Asn	Pro	Tyr	Gln	Asn	Lys	Asn	Glu	Tyr	Glu	Thr	Leu	Asn	Ala	Ser
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Gln	Lys	Lys	Leu	Asn	Ile	Ser	Asn	Asn	Tyr	Thr	Arg	Tyr	Pro	Ile	Glu
			20					25					30		
Asn	Ser	Pro	Lys	Gln	Leu	Leu	Gln	Ser	Thr	Asn	Tyr	Lys	Asp	Trp	Leu
		35					40					45			
Asn	Met	Cys	Gln	Gln	Asn	Gln	Gln	Tyr	Gly	Gly	Asp	Phe	Glu	Thr	Phe
	50					55					60				
Ile	Asp	Ser	Gly	Glu	Leu	Ser	Ala	Tyr	Thr	Ile	Val	Val	Gly	Thr	Val
65					70					75					80
Leu	Thr	Gly	Phe	Gly	Phe	Thr	Thr	Pro	Leu	Gly	Leu	Ala	Leu	Ile	Gly
			85					90						95	
Phe	Gly	Thr	Leu	Ile	Pro	Val	Leu	Phe	Pro	Ala	Gln	Asp	Gln	Ser	Asn
			100					105					110		
Thr	Trp	Ser	Asp	Phe	Ile	Thr	Gln	Thr	Lys	Asn	Ile	Ile	Lys	Lys	Glu
		115					120						125		
Ile	Ala	Ser	Thr	Tyr	Ile	Ser	Asn	Ala	Asn	Lys	Ile	Leu	Asn	Arg	Ser
	130					135					140				
Phe	Asn	Val	Ile	Ser	Thr	Tyr	His	Asn	His	Leu	Lys	Thr	Trp	Glu	Asn
145					150					155					160
Asn	Pro	Asn	Pro	Gln	Asn	Thr	Gln	Asp	Val	Arg	Thr	Gln	Ile	Gln	Leu
				165				170						175	
Val	His	Tyr	His	Phe	Gln	Asn	Val	Ile	Pro	Glu	Leu	Val	Asn	Ser	Cys
			180					185					190		
Pro	Pro	Asn	Pro	Ser	Asp	Cys	Asp	Tyr	Tyr	Asn	Ile	Leu	Val	Leu	Ser
		195					200					205			
Ser	Tyr	Ala	Gln	Ala	Ala	Asn	Leu	His	Leu	Thr	Val	Leu	Asn	Gln	Ala
	210					215					220				
Val	Lys	Phe	Glu	Ala	Tyr	Leu	Lys	Asn	Asn	Arg	Gln	Phe	Asp	Tyr	Leu
225					230					235					240
Glu	Pro	Leu	Pro	Thr	Ala	Ile	Asp	Tyr	Tyr	Pro	Val	Leu	Thr	Lys	Ala
				245				250						255	
Ile	Glu	Asp	Tyr	Thr	Asn	Tyr	Cys	Val	Thr	Thr	Tyr	Lys	Lys	Gly	Leu
		260					265						270		
Asn	Leu	Ile	Lys	Thr	Thr	Pro	Asp	Ser	Asn	Leu	Asp	Gly	Asn	Ile	Asn
	275						280					285			
Trp	Asn	Thr	Tyr	Asn	Thr	Tyr	Arg	Thr	Lys	Met	Thr	Thr	Ala	Val	Leu
	290					295					300				
Asp	Leu	Val	Ala	Leu	Phe	Pro	Asn	Tyr	Asp	Val	Gly	Lys	Tyr	Pro	Ile
305					310					315					320
Gly	Val	Gln	Ser	Glu	Leu	Thr	Arg	Glu	Ile	Tyr	Gln	Val	Leu	Asn	Phe
				325				330					335		
Glu	Glu	Ser	Pro	Tyr	Lys	Tyr	Tyr	Asp	Phe	Gln	Tyr	Gln	Glu	Asp	Ser
			340					345					350		
Leu	Thr	Arg	Arg	Pro	His	Leu	Phe	Thr	Trp	Leu	Asp	Ser	Leu	Asn	Phe
		355					360					365			
Tyr	Glu	Lys	Ala	Gln	Thr	Thr	Pro	Asn	Asn	Phe	Phe	Thr	Ser	His	Tyr
	370					375					380				

Asn	Met	Phe	His	Tyr	Thr	Leu	Asp	Asn	Ile	Ser	Gln	Lys	Ser	Ser	Val
385					390				395						400
Phe	Gly	Asn	His	Asn	Val	Thr	Asp	Lys	Leu	Lys	Ser	Leu	Gly	Leu	Ala
			405					410						415	
Thr	Asn	Ile	Tyr	Ile	Phe	Leu	Leu	Asn	Val	Ile	Ser	Leu	Asp	Asn	Lys
		420						425					430		
Tyr	Leu	Asn	Asp	Tyr	Asn	Asn	Ile	Ser	Lys	Met	Asp	Phe	Phe	Ile	Thr
		435					440					445			
Asn	Gly	Thr	Arg	Leu	Leu	Glu	Lys	Glu	Leu	Thr	Ala	Gly	Ser	Gly	Gln
	450					455					460				
Ile	Thr	Tyr	Asp	Val	Asn	Lys	Asn	Ile	Phe	Gly	Leu	Pro	Ile	Leu	Lys
465				470					475						480
Arg	Arg	Glu	Asn	Gln	Gly	Asn	Pro	Thr	Leu	Phe	Pro	Thr	Tyr	Asp	Asn
			485					490						495	
Tyr	Ser	His	Ile	Leu	Ser	Phe	Ile	Lys	Ser	Leu	Ser	Ile	Pro	Ala	Thr
		500						505					510		
Tyr	Lys	Thr	Gln	Val	Tyr	Thr	Phe	Ala	Trp	Thr	His	Ser	Ser	Val	Asp
	515						520					525			
Pro	Lys	Asn	Thr	Ile	Tyr	Thr	His	Leu	Thr	Thr	Gln	Ile	Pro	Ala	Val
	530					535					540				
Lys	Ala	Asn	Ser	Leu	Gly	Thr	Ala	Ser	Lys	Val	Val	Gln	Gly	Pro	Gly
545					550					555					560
His	Thr	Gly	Gly	Asp	Leu	Ile	Asp	Phe	Lys	Asp	His	Phe	Lys	Ile	Thr
			565					570						575	
Cys	Gln	His	Ser	Asn	Phe	Gln	Gln	Ser	Tyr	Phe	Ile	Arg	Ile	Arg	Tyr
		580						585				590			
Ala	Ser	Asn	Gly	Ser	Ala	Asn	Thr	Arg	Ala	Val	Ile	Asn	Leu	Ser	Ile
	595						600					605			
Pro	Gly	Val	Ala	Glu	Leu	Gly	Met	Ala	Leu	Asn	Pro	Thr	Phe	Ser	Gly
	610					615					620				
Thr	Asp	Tyr	Thr	Asn	Leu	Lys	Tyr	Lys	Asp	Phe	Gln	Tyr	Leu	Glu	Phe
625				630					635						640
Ser	Asn	Glu	Val	Lys	Phe	Ala	Pro	Asn	Gln	Asn	Ile	Ser	Leu	Val	Phe
			645					650						655	
Asn	Arg	Ser	Asp	Val	Tyr	Thr	Asn	Thr	Thr	Val	Leu	Ile	Asp	Lys	Ile
		660						665					670		
Glu	Phe	Leu	Pro	Ile	Thr	Arg	Ser	Ile	Arg	Glu	Asp	Arg	Glu	Lys	Gln
	675						680					685			
Lys	Leu	Glu	Thr	Val	Gln	Gln	Ile	Ile	Asn	Thr	Phe	Tyr	Ala	Asn	Pro
	690					695					700				
Ile	Lys	Asn	Thr	Leu	Gln	Ser	Glu	Leu	Thr	Asp	Tyr	Asp	Ile	Asp	Gln
705				710					715						720
Ala	Ala	Asn	Leu	Val	Glu	Cys	Ile	Ser	Glu	Glu	Leu	Tyr	Pro	Lys	Glu
			725					730						735	
Lys	Met	Leu	Leu	Leu	Asp	Glu	Val	Lys	Asn	Ala	Lys	Gln	Leu	Ser	Gln
		740						745					750		
Ser	Arg	Asn	Val	Leu	Gln	Asn	Gly	Asp	Phe	Glu	Ser	Ala	Thr	Leu	Gly
	755						760					765			
Trp	Thr	Thr	Ser	Asp	Asn	Ile	Thr	Ile	Gln	Glu	Asp	Asp	Pro	Ile	Phe
	770				775						780				
Lys	Gly	His	Tyr	Leu	His	Met	Ser	Gly	Ala	Arg	Asp	Ile	Asp	Gly	Thr
785				790					795						800
Ile	Phe	Pro	Thr	Tyr	Ile	Phe	Gln	Lys	Ile	Asp	Glu	Ser	Lys	Leu	Lys
			805						810					815	
Pro	Tyr	Thr	Arg	Tyr	Leu	Val	Arg	Gly	Phe	Val	Gly	Ser	Ser	Lys	Asp
			820					825				830			
Val	Glu	Leu	Val	Val	Ser	Arg	Tyr	Gly	Glu	Glu	Ile	Asp	Ala	Ile	Met

835	840	845
Asn Val Pro Ala Asp Leu	Asn Tyr Leu Tyr Pro	Ser Thr Phe Asp Cys
850	855	860
Glu Gly Ser Asn Arg Cys	Glu Thr Ser Ala Val	Pro Ala Asn Ile Gly
865	870	875
Asn Thr Ser Asp Met Leu	Tyr Ser Cys Gln Tyr	Asp Thr Gly Lys Lys
885	890	895
His Val Val Cys Gln Asp	Ser His Gln Phe Ser	Phe Thr Ile Asp Thr
900	905	910
Gly Ala Leu Asp Thr Asn	Glu Asn Ile Gly Val	Trp Val Met Phe Lys
915	920	925
Ile Ser Ser Pro Asp Gly	Tyr Ala Ser Leu Asp	Asn Leu Glu Val Ile
930	935	940
Glu Glu Gly Pro Ile Asp	Gly Glu Ala Leu Ser	Arg Val Lys His Met
945	950	955
Glu Lys Lys Trp Asn Asp	Gln Met Glu Ala Lys	Arg Ser Glu Thr Gln
965	970	975
Gln Ala Tyr Asp Val Ala	Lys Gln Ala Ile Asp	Ala Leu Phe Thr Asn
980	985	990
Val Gln Asp Glu Ala Leu	Gln Phe Asp Thr Thr	Leu Ala Gln Ile Gln
995	1000	1005
Tyr Ala Glu Tyr Leu Val	Gln Ser Ile Pro Tyr	Val Tyr Asn Asp Trp
1010	1015	1020
Leu Ser Asp Val Pro Gly	Met Asn Tyr Asp Ile	Tyr Val Glu Leu Asp
1025	1030	1035
Ala Arg Val Ala Gln Ala	Arg Tyr Leu Tyr Asp	Thr Arg Asn Ile Ile
1045	1050	1055
Lys Asn Gly Asp Phe Thr	Gln Gly Val Met Gly	Trp His Val Thr Gly
1060	1065	1070
Asn Ala Asp Val Gln Gln	Ile Asp Gly Val Ser	Val Leu Val Leu Ser
1075	1080	1085
Asn Trp Ser Ala Gly Val	Ser Gln Asn Val His	Leu Gln His Asn His
1090	1095	1100
Gly Tyr Val Leu Arg Val	Ile Ala Lys Lys Glu	Gly Pro Gly Asn Gly
1105	1110	1115
Tyr Val Thr Leu Met Asp	Cys Glu Glu Asn Gln	Glu Lys Leu Thr Phe
1125	1130	1135
Thr Ser Cys Glu Glu Gly	Tyr Ile Thr Lys Thr	Val Asp Val Phe Pro
1140	1145	1150
Asp Thr Asp Arg Val Arg	Ile Glu Ile Gly Glu	Thr Glu Gly Ser Phe
1155	1160	1165
Tyr Ile Glu Ser Ile Glu	Leu Ile Cys Met Asn	Glu
1170	1175	1180

<210> 11

<211> 475

<212> PRT

<213> Bacillus thuringiensis

<400> 11

Met Ile Ile Asp Ser Lys Thr Thr	Leu Pro Arg His Ser Leu Ile His
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Thr Ile Lys Leu Asn Ser Asn Lys	Lys Tyr Gly Pro Gly Asp Met Thr
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Asn Gly Asn Gln Phe Ile Ile Ser	Lys Gln Glu Trp Ala Thr Ile Gly
35	40 45

Ala	Tyr	Ile	Gln	Thr	Gly	Leu	Gly	Leu	Pro	Val	Asn	Glu	Gln	Gln	Leu
50						55					60				
Arg	Thr	His	Val	Asn	Leu	Ser	Gln	Asp	Ile	Ser	Ile	Pro	Ser	Asp	Phe
65					70					75					80
Ser	Gln	Leu	Tyr	Asp	Val	Tyr	Cys	Ser	Asp	Lys	Thr	Ser	Ala	Glu	Trp
				85					90					95	
Trp	Asn	Lys	Asn	Leu	Tyr	Pro	Leu	Ile	Ile	Lys	Ser	Ala	Asn	Asp	Ile
			100					105					110		
Ala	Ser	Tyr	Gly	Phe	Lys	Val	Ala	Gly	Asp	Pro	Ser	Ile	Lys	Lys	Asp
		115					120					125			
Gly	Tyr	Phe	Lys	Lys	Leu	Gln	Asp	Glu	Leu	Asp	Asn	Ile	Val	Asp	Asn
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Asn	Ser	Asp	Asp	Asp	Ala	Ile	Ala	Lys	Ala	Ile	Lys	Asp	Phe	Lys	Ala
145					150					155					160
Arg	Cys	Gly	Ile	Leu	Ile	Lys	Glu	Ala	Lys	Gln	Tyr	Glu	Glu	Ala	Ala
				165					170					175	
Lys	Asn	Ile	Val	Thr	Ser	Leu	Asp	Gln	Phe	Leu	His	Gly	Asp	Gln	Lys
			180					185					190		
Lys	Leu	Glu	Gly	Val	Ile	Asn	Ile	Gln	Lys	Arg	Leu	Lys	Glu	Val	Gln
		195					200					205			
Thr	Ala	Leu	Asn	Gln	Ala	His	Gly	Glu	Ser	Ser	Pro	Ala	His	Lys	Glu
	210					215					220				
Leu	Leu	Glu	Lys	Val	Lys	Asn	Leu	Lys	Thr	Thr	Leu	Glu	Arg	Thr	Ile
225					230					235					240
Lys	Ala	Glu	Gln	Asp	Leu	Glu	Lys	Lys	Val	Glu	Tyr	Ser	Phe	Leu	Leu
				245					250					255	
Gly	Pro	Leu	Leu	Gly	Phe	Val	Val	Tyr	Glu	Ile	Leu	Glu	Asn	Thr	Ala
		260						265					270		
Val	Gln	His	Ile	Lys	Asn	Gln	Ile	Asp	Glu	Ile	Lys	Lys	Gln	Leu	Asp
		275					280					285			
Ser	Ala	Gln	His	Asp	Leu	Asp	Arg	Asp	Val	Lys	Ile	Ile	Gly	Met	Leu
	290					295					300				
Asn	Ser	Ile	Asn	Thr	Asp	Ile	Asp	Asn	Leu	Tyr	Ser	Gln	Gly	Gln	Glu
305				310						315					320
Ala	Ile	Lys	Val	Phe	Gln	Lys	Leu	Gln	Gly	Ile	Trp	Ala	Thr	Ile	Gly
				325					330					335	
Ala	Gln	Ile	Glu	Asn	Leu	Arg	Thr	Thr	Ser	Leu	Gln	Glu	Val	Gln	Asp
			340					345					350		
Ser	Asp	Asp	Ala	Asp	Glu	Ile	Gln	Ile	Glu	Leu	Glu	Asp	Ala	Ser	Asp
		355					360					365			
Ala	Trp	Leu	Val	Val	Ala	Gln	Glu	Ala	Arg	Asp	Phe	Thr	Leu	Asn	Ala
	370					375					380				
Tyr	Ser	Thr	Asn	Ser	Arg	Gln	Asn	Leu	Pro	Ile	Asn	Val	Ile	Ser	Asp
385				390						395					400
Ser	Cys	Asn	Cys	Ser	Thr	Thr	Asn	Met	Thr	Ser	Asn	Gln	Tyr	Ser	Asn
				405					410					415	
Pro	Thr	Thr	Asn	Met	Thr	Ser	Asn	Gln	Tyr	Met	Ile	Ser	His	Glu	Tyr
			420					425					430		
Thr	Ser	Leu	Pro	Asn	Asn	Phe	Met	Leu	Ser	Arg	Asn	Ser	Asn	Leu	Glu
		435					440					445			
Tyr	Lys	Cys	Pro	Glu	Asn	Asn	Phe	Met	Ile	Tyr	Trp	Tyr	Asn	Asn	Ser
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Asp	Trp	Tyr	Asn	Asn	Ser	Asp	Trp	Tyr	Asn	Asn					
465					470					475					

<210> 12

<211> 1138
 <212> PRT
 <213> *Bacillus thuringiensis*

<400> 12

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Asn	Asn	Ser	Leu	Asn	Tyr	Pro	Thr	Gln	Lys	Ala	Leu	Ser	Pro	Ser	Leu
			20					25					30		
Lys	Asn	Met	Asn	Tyr	Gln	Asp	Phe	Leu	Ser	Ile	Thr	Glu	Arg	Glu	Gln
		35					40					45			
Pro	Glu	Ala	Leu	Ala	Ser	Gly	Asn	Thr	Ala	Ile	Asn	Thr	Val	Val	Ser
	50					55					60				
Val	Thr	Gly	Ala	Thr	Leu	Ser	Ala	Leu	Gly	Val	Pro	Gly	Ala	Ser	Phe
65					70					75					80
Ile	Thr	Asn	Phe	Tyr	Leu	Lys	Ile	Ala	Gly	Leu	Leu	Trp	Pro	Glu	Asn
				85					90					95	
Gly	Lys	Ile	Trp	Asp	Glu	Phe	Met	Thr	Glu	Val	Glu	Ala	Leu	Ile	Asp
			100					105					110		
Gln	Lys	Ile	Glu	Glu	Tyr	Val	Arg	Asn	Lys	Ala	Ile	Ala	Glu	Leu	Asp
		115					120					125			
Gly	Leu	Gly	Ser	Ala	Leu	Asp	Lys	Tyr	Gln	Lys	Ala	Leu	Ala	Asp	Trp
	130					135					140				
Leu	Gly	Lys	Gln	Asp	Asp	Pro	Glu	Ala	Ile	Leu	Ser	Val	Ala	Thr	Glu
145					150					155					160
Phe	Arg	Ile	Ile	Asp	Ser	Leu	Phe	Glu	Phe	Ser	Met	Pro	Ser	Phe	Lys
				165					170					175	
Val	Thr	Gly	Tyr	Glu	Ile	Pro	Leu	Leu	Thr	Val	Tyr	Ala	Gln	Ala	Ala
			180					185					190		
Asn	Leu	His	Leu	Ala	Leu	Leu	Arg	Asp	Ser	Thr	Leu	Tyr	Gly	Asp	Lys
		195					200					205			
Trp	Gly	Phe	Thr	Gln	Asn	Asn	Ile	Glu	Glu	Asn	Tyr	Asn	Arg	Gln	Lys
	210					215					220				
Lys	Arg	Ile	Ser	Glu	Tyr	Ser	Asp	His	Cys	Thr	Lys	Trp	Tyr	Asn	Ser
225					230					235					240
Gly	Leu	Ser	Arg	Leu	Asn	Gly	Ser	Thr	Tyr	Glu	Gln	Trp	Ile	Asn	Tyr
				245					250					255	
Asn	Arg	Phe	Arg	Arg	Glu	Met	Ile	Leu	Met	Ala	Leu	Asp	Leu	Val	Ala
			260					265					270		
Val	Phe	Pro	Phe	His	Asp	Pro	Arg	Arg	Tyr	Ser	Met	Glu	Thr	Ser	Thr
		275					280					285			
Gln	Leu	Thr	Arg	Glu	Val	Tyr	Thr	Asp	Pro	Val	Ser	Leu	Ser	Ile	Ser
	290					295					300				
Asn	Pro	Asp	Ile	Gly	Pro	Ser	Phe	Ser	Gln	Met	Glu	Asn	Thr	Ala	Ile
305					310					315					320
Arg	Thr	Pro	His	Leu	Val	Asp	Tyr	Leu	Asp	Glu	Leu	Tyr	Ile	Tyr	Thr
				325					330					335	
Ser	Lys	Tyr	Lys	Ala	Phe	Ser	His	Glu	Ile	Gln	Pro	Asp	Leu	Phe	Tyr
			340					345					350		
Trp	Ser	Ala	His	Lys	Val	Ser	Phe	Lys	Lys	Ser	Glu	Gln	Ser	Asn	Leu
		355					360					365			
Tyr	Thr	Thr	Gly	Ile	Tyr	Gly	Lys	Thr	Ser	Gly	Tyr	Ile	Ser	Ser	Gly
	370					375					380				
Ala	Tyr	Ser	Phe	His	Gly	Asn	Asp	Ile	Tyr	Arg	Thr	Leu	Ala	Ala	Pro
385					390					395					400
Ser	Val	Val	Val	Tyr	Pro	Tyr	Thr	Gln	Asn	Tyr	Gly	Val	Glu	Gln	Val
				405					410					415	

Glu	Phe	Tyr	Gly	Val	Lys	Gly	His	Val	His	Tyr	Arg	Gly	Asp	Asn	Lys		
			420					425					430				
Tyr	Asp	Leu	Thr	Tyr	Asp	Ser	Ile	Asp	Gln	Leu	Pro	Pro	Asp	Gly	Glu		
		435					440					445					
Pro	Ile	His	Glu	Lys	Tyr	Thr	His	Arg	Leu	Cys	His	Ala	Thr	Ala	Ile		
	450					455					460						
Phe	Lys	Ser	Thr	Pro	Asp	Tyr	Asp	Asn	Ala	Thr	Ile	Pro	Ile	Phe	Ser		
465					470					475					480		
Trp	Thr	His	Arg	Ser	Ala	Glu	Tyr	Tyr	Asn	Arg	Ile	Tyr	Pro	Asn	Lys		
				485					490					495			
Ile	Thr	Lys	Ile	Pro	Ala	Val	Lys	Met	Tyr	Lys	Leu	Asp	Asp	Pro	Ser		
		500						505					510				
Thr	Val	Val	Lys	Gly	Pro	Gly	Phe	Thr	Gly	Gly	Asp	Leu	Val	Lys	Arg		
		515					520					525					
Gly	Ser	Thr	Gly	Tyr	Ile	Gly	Asp	Ile	Lys	Ala	Thr	Val	Asn	Ser	Pro		
	530					535					540						
Leu	Ser	Gln	Lys	Tyr	Arg	Val	Arg	Val	Arg	Tyr	Ala	Thr	Asn	Val	Ser		
545					550					555					560		
Gly	Gln	Phe	Asn	Val	Tyr	Ile	Asn	Asp	Lys	Ile	Thr	Leu	Gln	Thr	Lys		
			565					570					575				
Phe	Gln	Asn	Thr	Val	Glu	Thr	Ile	Gly	Glu	Gly	Lys	Asp	Leu	Thr	Tyr		
			580					585					590				
Gly	Ser	Phe	Gly	Tyr	Ile	Glu	Tyr	Ser	Thr	Thr	Ile	Gln	Phe	Pro	Asp		
		595					600					605					
Glu	His	Pro	Lys	Ile	Thr	Leu	His	Leu	Ser	Asp	Leu	Ser	Asn	Asn	Ser		
	610					615					620						
Ser	Phe	Tyr	Val	Asp	Ser	Ile	Glu	Phe	Ile	Pro	Val	Asp	Val	Asn	Tyr		
625					630					635					640		
Ala	Glu	Lys	Glu	Lys	Leu	Glu	Lys	Ala	Gln	Lys	Ala	Val	Asn	Thr	Leu		
			645						650					655			
Phe	Thr	Glu	Gly	Arg	Asn	Ala	Leu	Gln	Lys	Asp	Val	Thr	Asp	Tyr	Lys		
			660					665					670				
Val	Asp	Gln	Val	Ser	Ile	Leu	Val	Asp	Cys	Ile	Ser	Gly	Asp	Leu	Tyr		
		675					680					685					
Pro	Asn	Glu	Lys	Arg	Glu	Leu	Gln	Asn	Leu	Val	Lys	Tyr	Ala	Lys	Arg		
	690					695					700						
Leu	Ser	Tyr	Ser	Arg	Asn	Leu	Leu	Leu	Asp	Pro	Thr	Phe	Asp	Ser	Ile		
705					710					715					720		
Asn	Ser	Ser	Glu	Glu	Asn	Gly	Trp	Tyr	Gly	Ser	Asn	Gly	Ile	Val	Ile		
			725						730				735				
Gly	Asn	Gly	Asp	Phe	Val	Phe	Lys	Gly	Asn	Tyr	Leu	Ile	Phe	Ser	Gly		
			740					745					750				
Thr	Asn	Asp	Thr	Gln	Tyr	Pro	Thr	Tyr	Leu	Tyr	Gln	Lys	Ile	Asp	Glu		
		755					760					765					
Ser	Lys	Leu	Lys	Glu	Tyr	Thr	Arg	Tyr	Lys	Leu	Lys	Gly	Phe	Ile	Glu		
	770					775					780						
Ser	Ser	Gln	Asp	Leu	Glu	Ala	Tyr	Val	Ile	Arg	Tyr	Asp	Ala	Lys	His		
785					790					795					800		
Arg	Thr	Leu	Asp	Val	Ser	Asp	Asn	Leu	Leu	Pro	Asp	Ile	Leu	Pro	Glu		
			805						810					815			
Asn	Thr	Cys	Gly	Pro	Asn	Arg	Cys	Ala	Ala	Gln	Gln	Tyr	Leu	Asp			
		820					825					830					
Glu	Asn	Pro	Ser	Pro	Glu	Cys	Ser	Ser	Met	Gln	Asp	Gly	Ile	Leu	Ser		
	835					840					845						
Asp	Ser	His	Ser	Phe	Ser	Leu	Asn	Ile	Asp	Thr	Gly	Ser	Ile	Asn	His		
	850					855				860							
Asn	Glu	Asn	Leu	Gly	Ile	Trp	Val	Leu	Phe	Lys	Ile	Ser	Thr	Leu	Glu		

865					870					875				880
Gly	Tyr	Ala	Lys	Phe	Gly	Asn	Leu	Glu	Val	Ile	Glu	Asp	Gly	Pro Val
				885						890				895
Ile	Gly	Glu	Ala	Leu	Ala	Arg	Val	Lys	Arg	Gln	Glu	Thr	Lys	Trp Arg
			900					905					910	
Asn	Lys	Leu	Ala	Gln	Leu	Thr	Thr	Glu	Thr	Gln	Ala	Ile	Tyr	Thr Arg
		915					920					925		
Ala	Lys	Gln	Ala	Leu	Asp	Asn	Leu	Phe	Ala	Asn	Ala	Gln	Asp	Ser His
	930					935					940			
Leu	Lys	Arg	Asp	Val	Thr	Phe	Ala	Glu	Ile	Ala	Ala	Ala	Arg	Lys Ile
945					950					955				960
Val	Gln	Ser	Ile	Arg	Glu	Ala	Tyr	Met	Ser	Trp	Leu	Ser	Val	Val Pro
				965					970					975
Gly	Val	Asn	His	Pro	Ile	Phe	Thr	Glu	Leu	Ser	Gly	Arg	Val	Gln Arg
			980					985					990	
Ala	Phe	Gln	Leu	Tyr	Asp	Val	Arg	Asn	Val	Val	Arg	Asn	Gly	Arg Phe
		995					1000					1005		
Leu	Asn	Gly	Leu	Ser	Asp	Trp	Ile	Val	Thr	Ser	Asp	Val	Lys	Val Gln
	1010					1015					1020			
Glu	Glu	Asn	Gly	Asn	Asn	Val	Leu	Val	Leu	Asn	Asn	Trp	Asp	Ala Gln
1025					1030					1035				1040
Val	Leu	Gln	Asn	Val	Lys	Leu	Tyr	Gln	Asp	Arg	Gly	Tyr	Ile	Leu His
				1045					1050					1055
Val	Thr	Ala	Arg	Lys	Ile	Gly	Ile	Gly	Glu	Gly	Tyr	Ile	Thr	Ile Thr
			1060					1065					1070	
Asp	Glu	Glu	Gly	His	Thr	Asp	Gln	Leu	Arg	Phe	Thr	Ala	Cys	Glu Glu
		1075					1080					1085		
Ile	Asp	Ala	Ser	Asn	Ala	Phe	Ile	Ser	Gly	Tyr	Ile	Thr	Lys	Glu Leu
	1090				1095						1100			
Glu	Phe	Phe	Pro	Asp	Thr	Glu	Lys	Val	His	Ile	Glu	Ile	Gly	Glu Thr
1105					1110					1115				1120
Glu	Gly	Ile	Phe	Leu	Val	Glu	Ser	Ile	Glu	Leu	Phe	Leu	Met	Glu Glu
				1125					1130					1135
Leu	Cys													

<210> 13
 <211> 1157
 <212> PRT
 <213> *Bacillus thuringiensis*

<400> 13
 Met Ser Pro Asn Asn Gln Asn Glu Tyr Glu Ile Ile Asp Ala Thr Pro
 1 5 10 15
 Ser Thr Ser Val Ser Ser Asp Ser Asn Arg Tyr Pro Phe Ala Asn Glu
 20 25 30
 Pro Thr Asp Ala Leu Gln Asn Met Asn Tyr Lys Asp Tyr Leu Lys Met
 35 40 45
 Ser Gly Gly Glu Asn Pro Glu Leu Phe Gly Asn Pro Glu Thr Phe Ile
 50 55 60
 Ser Ser Ser Thr Ile Gln Thr Gly Ile Gly Ile Val Gly Arg Ile Leu
 65 70 75 80
 Gly Ala Leu Gly Val Pro Phe Ala Ser Gln Ile Ala Ser Phe Tyr Ser
 85 90 95
 Phe Ile Val Gly Gln Leu Trp Pro Ser Lys Ser Val Asp Ile Trp Gly
 100 105 110

RTA01/2150158v1

RTA01/2150158v1

Asn Gly Asp Phe Arg Asn Gly Leu Ser Asn Trp Asn Ala Thr Pro Gly
 1025 1030 1035 1040
 Val Glu Val Gln Gln Ile Asn His Thr Ser Val Leu Val Ile Pro Asn
 1045 1050 1055
 Trp Asp Glu Gln Val Ser Gln Gln Phe Thr Val Gln Pro Asn Gln Arg
 1060 1065 1070
 Tyr Val Leu Arg Val Thr Ala Arg Lys Glu Gly Val Gly Asn Gly Tyr
 1075 1080 1085
 Val Ser Ile Arg Asp Gly Gly Asn Gln Ser Glu Thr Leu Thr Phe Ser
 1090 1095 1100
 Ala Ser Asp Tyr Asp Thr Asn Gly Val Tyr Asn Asp Gln Thr Gly Tyr
 1105 1110 1115 1120
 Ile Thr Lys Thr Val Thr Phe Ile Pro Tyr Thr Asp Gln Met Trp Ile
 1125 1130 1135
 Glu Ile Ser Glu Thr Glu Gly Thr Phe Tyr Ile Glu Ser Val Glu Leu
 1140 1145 1150
 Ile Val Asp Val Glu
 1155

<210> 14

<211> 675

<212> PRT

<213> *Bacillus thuringiensis*

<400> 14

Met Asn Pro Tyr Gln Asn Lys Asn Glu Tyr Glu Ile Phe Asn Ala Pro
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 Ser Asn Gly Phe Ser Lys Ser Asn Asn Tyr Ser Arg Tyr Pro Leu Ala
 20 25 30
 Asn Lys Pro Asn Gln Pro Leu Lys Asn Thr Asn Tyr Lys Asp Trp Leu
 35 40 45
 Asn Val Cys Gln Asp Asn Gln Tyr Gly Asn Asn Ala Gly Asn Phe
 50 55 60
 Ala Ser Ser Glu Thr Ile Val Gly Val Ser Ala Gly Ile Ile Val Val
 65 70 75 80
 Gly Thr Met Leu Gly Ala Phe Ala Ala Pro Val Leu Ala Ala Gly Ile
 85 90 95
 Ile Ser Phe Gly Thr Leu Leu Pro Ile Phe Trp Gln Gly Ser Asp Pro
 100 105 110
 Ala Asn Val Trp Gln Asp Leu Leu Asn Ile Gly Gly Arg Pro Ile Gln
 115 120 125
 Glu Ile Asp Lys Asn Ile Ile Asn Val Leu Thr Ser Ile Val Thr Pro
 130 135 140
 Ile Lys Asn Gln Leu Asp Lys Tyr Gln Glu Phe Phe Asp Lys Trp Glu
 145 150 155 160
 Pro Ala Arg Thr His Ala Asn Ala Lys Ala Val His Asp Leu Phe Thr
 165 170 175
 Thr Leu Glu Pro Ile Ile Asp Lys Asp Leu Asp Met Leu Lys Asn Asn
 180 185 190
 Ala Ser Tyr Arg Ile Pro Thr Leu Pro Ala Tyr Ala Gln Ile Ala Thr
 195 200 205
 Trp His Leu Asn Leu Leu Lys His Ala Ala Thr Tyr Tyr Asn Ile Trp
 210 215 220
 Leu Gln Asn Gln Gly Ile Asn Pro Ser Thr Phe Asn Ser Ser Asn Tyr
 225 230 235 240
 Tyr Gln Gly Tyr Leu Lys Arg Lys Ile Gln Glu Tyr Thr Asp Tyr Cys

Ile	Gln	Thr	Tyr	Asn	Ala	Gly	Leu	Thr	Met	Ile	Arg	Thr	Asn	Thr	Asn	245	250	255
				260					265				270					
Ala	Thr	Trp	Asn	Met	Tyr	Asn	Thr	Tyr	Arg	Leu	Glu	Met	Thr	Leu	Thr			
		275							280				285					
Val	Leu	Asp	Leu	Ile	Ala	Ile	Phe	Pro	Asn	Tyr	Asp	Pro	Glu	Lys	Tyr			
	290					295					300							
Pro	Ile	Gly	Val	Lys	Ser	Glu	Leu	Ile	Arg	Glu	Val	Tyr	Thr	Asn	Val			
305					310					315				320				
Asn	Ser	Asp	Thr	Phe	Arg	Thr	Ile	Thr	Glu	Leu	Glu	Asn	Gly	Leu	Thr			
				325					330					335				
Arg	Asn	Pro	Thr	Leu	Phe	Thr	Trp	Ile	Asn	Gln	Gly	Arg	Phe	Tyr	Thr			
			340					345					350					
Arg	Asn	Ser	Arg	Asp	Ile	Leu	Asp	Pro	Tyr	Asp	Ile	Phe	Ser	Phe	Thr			
		355					360					365						
Gly	Asn	Gln	Met	Ala	Phe	Thr	His	Thr	Asn	Asp	Asp	Arg	Asn	Ile	Ile			
	370					375				380								
Trp	Gly	Ala	Val	His	Gly	Asn	Ile	Ile	Ser	Gln	Asp	Thr	Ser	Lys	Val			
385					390					395				400				
Phe	Pro	Phe	Tyr	Arg	Asn	Lys	Pro	Ile	Asp	Lys	Val	Glu	Ile	Val	Arg			
				405					410					415				
His	Arg	Glu	Tyr	Ser	Asp	Ile	Ile	Tyr	Glu	Met	Ile	Phe	Phe	Ser	Asn			
			420					425					430					
Ser	Ser	Glu	Val	Phe	Arg	Tyr	Ser	Ser	Asn	Ser	Thr	Ile	Glu	Asn	Asn			
		435					440					445						
Tyr	Lys	Arg	Thr	Asp	Ser	Tyr	Met	Ile	Pro	Lys	Gln	Thr	Trp	Lys	Asn			
	450					455					460							
Glu	Glu	Tyr	Gly	His	Thr	Leu	Ser	Tyr	Ile	Lys	Thr	Asp	Asn	Tyr	Ile			
465					470					475					480			
Phe	Ser	Val	Val	Arg	Glu	Arg	Arg	Arg	Val	Ala	Phe	Ser	Trp	Thr	His			
				485					490					495				
Thr	Ser	Val	Asp	Phe	Gln	Asn	Thr	Ile	Asp	Leu	Asp	Asn	Ile	Thr	Gln			
			500					505					510					
Ile	His	Ala	Leu	Lys	Ala	Leu	Lys	Val	Ser	Ser	Asp	Ser	Lys	Ile	Val			
		515					520					525						
Lys	Gly	Pro	Gly	His	Thr	Gly	Gly	Asp	Leu	Val	Ile	Leu	Lys	Asp	Ser			
	530					535					540							
Met	Asp	Phe	Arg	Val	Arg	Phe	Leu	Lys	Asn	Val	Ser	Arg	Gln	Tyr	Gln			
545					550					555				560				
Val	Arg	Ile	Arg	Tyr	Ala	Thr	Asn	Ala	Pro	Lys	Thr	Thr	Val	Phe	Leu			
				565					570					575				
Thr	Gly	Ile	Asp	Thr	Ile	Ser	Val	Glu	Leu	Pro	Ser	Thr	Thr	Ser	Arg			
			580					585					590					
Gln	Asn	Pro	Asn	Ala	Thr	Asp	Leu	Thr	Tyr	Ala	Asp	Phe	Gly	Tyr	Val			
		595					600					605						
Thr	Phe	Pro	Arg	Thr	Val	Pro	Asn	Lys	Thr	Phe	Glu	Gly	Glu	Asp	Thr			
	610					615					620							
Leu	Leu	Met	Thr	Leu	Tyr	Gly	Thr	Pro	Asn	His	Ser	Tyr	Asn	Ile	Tyr			
625					630					635				640				
Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Ile	Thr	Gln	Ser	Val	Leu	Asp	Tyr			
				645					650					655				
Thr	Glu	Lys	Gln	Asn	Ile	Glu	Lys	Thr	Gln	Lys	Ile	Val	Asn	Asp	Leu			
			660					665					670					
Phe	Val	Asn																
		675																

<210> 15
 <211> 648
 <212> PRT
 <213> *Bacillus thuringiensis*

<400> 15
 Met His Tyr Tyr Gly Asn Arg Asn Glu Tyr Asp Ile Leu Asn Ala Ser
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 Ser Asn Asp Ser Asn Met Ser Asn Thr Tyr Pro Arg Tyr Pro Leu Ala
 20 25 30
 Asn Pro Gln Gln Asp Leu Met Gln Asn Thr Asn Tyr Lys Asp Trp Leu
 35 40 45
 Asn Val Cys Glu Gly Tyr His Ile Glu Asn Pro Arg Glu Ala Ser Val
 50 55 60
 Arg Ala Gly Leu Gly Lys Gly Leu Gly Ile Val Ser Thr Ile Val Gly
 65 70 75 80
 Phe Phe Gly Gly Ser Ile Ile Leu Asp Thr Ile Gly Leu Phe Tyr Gln
 85 90 95
 Ile Ser Glu Leu Leu Trp Pro Glu Asp Asp Thr Gln Gln Tyr Thr Trp
 100 105 110
 Gln Asp Ile Met Asn His Val Glu Asp Leu Ile Asp Lys Arg Ile Thr
 115 120 125
 Glu Val Ile Arg Gly Asn Ala Ile Arg Thr Leu Ala Asp Leu Gln Gly
 130 135 140
 Lys Val Asp Asp Tyr Asn Asn Trp Leu Lys Lys Trp Lys Asp Asp Pro
 145 150 155 160
 Lys Ser Thr Gly Asn Leu Ser Thr Leu Val Thr Lys Phe Thr Ala Leu
 165 170 175
 Asp Ser Asp Phe Asn Gly Ala Ile Arg Thr Val Asn Asn Gln Gly Ser
 180 185 190
 Pro Gly Tyr Glu Leu Leu Leu Leu Pro Val Tyr Ala Gln Ile Ala Asn
 195 200 205
 Leu His Leu Leu Leu Leu Arg Asp Ala Gln Ile Tyr Gly Asp Lys Trp
 210 215 220
 Trp Ser Ala Arg Ala Asn Ala Arg Asp Asn Tyr Tyr Gln Ile Gln Leu
 225 230 235 240
 Glu Lys Thr Lys Glu Tyr Thr Glu Tyr Cys Ile Asn Trp Tyr Asn Lys
 245 250 255
 Gly Leu Asn Asp Phe Arg Thr Ala Gly Gln Trp Val Asn Phe Asn Arg
 260 265 270
 Tyr Arg Arg Glu Met Thr Leu Thr Val Leu Asp Ile Ile Ser Met Phe
 275 280 285
 Pro Ile Tyr Asp Ala Arg Leu Tyr Pro Thr Glu Val Lys Thr Glu Leu
 290 295 300
 Thr Arg Glu Ile Tyr Ser Asp Val Ile Asn Gly Glu Ile Tyr Gly Leu
 305 310 315 320
 Met Thr Pro Tyr Phe Ser Phe Glu Lys Ala Glu Ser Leu Tyr Thr Arg
 325 330 335
 Ala Pro His Leu Phe Thr Trp Leu Lys Gly Phe Arg Phe Val Thr Asn
 340 345 350
 Ser Ile Ser Tyr Trp Thr Phe Leu Ser Gly Gly Gln Asn Lys Tyr Ser
 355 360 365
 Tyr Thr Asn Asn Ser Ser Ile Asn Glu Gly Ser Phe Arg Gly Gln Asp
 370 375 380
 Thr Asp Tyr Gly Gly Thr Ser Ser Thr Ile Asn Ile Pro Ser Asn Ser
 385 390 395 400
 Tyr Val Tyr Asn Leu Trp Thr Glu Asn Tyr Glu Tyr Ile Tyr Pro Trp

				405					410					415			
Gly	Asp	Pro	Val	Asn	Ile	Thr	Lys	Met	Asn	Phe	Ser	Val	Thr	Asp	Asn		
			420					425					430				
Asn	Ser	Ser	Lys	Glu	Leu	Ile	Tyr	Gly	Ala	His	Arg	Thr	Asn	Lys	Pro		
		435					440					445					
Val	Val	Arg	Thr	Asp	Phe	Asp	Phe	Leu	Thr	Asn	Lys	Glu	Gly	Thr	Glu		
	450					455					460						
Leu	Ala	Lys	Tyr	Asn	Asp	Tyr	Asn	His	Ile	Leu	Ser	Tyr	Met	Leu	Ile		
465					470					475					480		
Asn	Gly	Glu	Thr	Phe	Gly	Gln	Lys	Arg	His	Gly	Tyr	Ser	Phe	Ala	Phe		
				485					490						495		
Thr	His	Ser	Ser	Val	Asp	Pro	Asn	Asn	Thr	Ile	Ala	Ala	Asn	Lys	Ile		
			500					505					510				
Thr	Gln	Ile	Pro	Val	Val	Lys	Ala	Ser	Ser	Ile	Asn	Gly	Ser	Ile	Ser		
		515					520					525					
Ile	Glu	Lys	Gly	Pro	Gly	Phe	Thr	Gly	Gly	Asp	Leu	Val	Lys	Met	Arg		
	530					535					540						
Ala	Asp	Ser	Gly	Leu	Thr	Met	Arg	Phe	Lys	Ala	Glu	Leu	Leu	Asp	Lys		
545					550					555					560		
Lys	Tyr	Arg	Val	Arg	Ile	Arg	Tyr	Lys	Cys	Asn	Tyr	Ser	Ser	Lys	Leu		
			565					570						575			
Ile	Leu	Arg	Lys	Trp	Lys	Gly	Glu	Gly	Tyr	Ile	Gln	Gln	Gln	Ile	His		
			580					585					590				
Asn	Ile	Ser	Pro	Thr	Tyr	Gly	Ala	Phe	Ser	Tyr	Leu	Glu	Ser	Phe	Thr		
		595				600					605						
Ile	Thr	Thr	Thr	Glu	Asn	Ile	Phe	Asp	Leu	Thr	Met	Glu	Val	Thr	Tyr		
	610					615					620						
Pro	Tyr	Gly	Arg	Gln	Phe	Val	Glu	Asp	Ile	Pro	Ser	Leu	Ile	Leu	Asp		
625					630					635					640		
Lys	Ile	Glu	Phe	Leu	Pro	Thr	Asn										
				645													

<210> 16
 <211> 682
 <212> PRT
 <213> *Bacillus thuringiensis*

<400> 16																	
Met	Asn	Ser	Tyr	Gln	Asn	Lys	Asn	Glu	Tyr	Glu	Ile	Leu	Asp	Ala	Lys		
1				5				10					15				
Arg	Asn	Thr	Cys	His	Met	Ser	Asn	Cys	Tyr	Pro	Lys	Tyr	Pro	Leu	Ala		
			20					25				30					
Asn	Asp	Pro	Gln	Met	Tyr	Leu	Arg	Asn	Thr	His	Tyr	Lys	Asp	Trp	Ile		
		35				40					45						
Asn	Met	Cys	Glu	Glu	Ala	Ser	Tyr	Ala	Ser	Ser	Gly	Pro	Ser	Gln	Leu		
	50					55					60						
Phe	Lys	Val	Gly	Gly	Ser	Ile	Val	Ala	Lys	Ile	Leu	Gly	Met	Ile	Pro		
65					70					75					80		
Glu	Val	Gly	Pro	Leu	Leu	Ser	Trp	Met	Val	Ser	Leu	Phe	Trp	Pro	Thr		
				85				90						95			
Ile	Glu	Glu	Lys	Asn	Thr	Val	Trp	Glu	Asp	Met	Ile	Lys	Tyr	Val	Ala		
			100					105				110					
Asn	Leu	Leu	Lys	Gln	Glu	Leu	Thr	Asn	Asp	Thr	Leu	Asn	Arg	Ala	Thr		
		115				120					125						
Ser	Asn	Leu	Ser	Gly	Leu	Asn	Glu	Ser	Leu	Asn	Ile	Tyr	Asn	Arg	Ala		
	130					135					140						

Leu	Ala	Ala	Trp	Lys	Gln	Asn	Lys	Asn	Asn	Phe	Ala	Ser	Gly	Glu	Leu
145					150					155					160
Ile	Arg	Ser	Tyr	Ile	Asn	Asp	Leu	His	Ile	Leu	Phe	Thr	Arg	Asp	Ile
				165						170					175
Gln	Ser	Asp	Phe	Ser	Leu	Gly	Gly	Tyr	Glu	Thr	Val	Leu	Leu	Pro	Ser
			180						185					190	
Tyr	Ala	Ser	Ala	Ala	Asn	Leu	His	Leu	Leu	Leu	Leu	Arg	Asp	Val	Ala
		195					200					205			
Ile	Tyr	Gly	Lys	Glu	Leu	Gly	Tyr	Pro	Ser	Thr	Asp	Val	Glu	Phe	Tyr
	210					215					220				
Tyr	Asn	Glu	Gln	Lys	Tyr	Tyr	Thr	Glu	Lys	Tyr	Ser	Asn	Tyr	Cys	Val
225					230					235					240
Asn	Thr	Tyr	Lys	Ser	Gly	Leu	Glu	Ser	Lys	Lys	Gln	Ile	Gly	Trp	Ser
			245						250						255
Asp	Phe	Asn	Arg	Tyr	Arg	Arg	Glu	Met	Thr	Leu	Ser	Val	Leu	Asp	Ile
			260					265					270		
Val	Ala	Leu	Phe	Pro	Leu	Tyr	Asp	Thr	Gly	Leu	Tyr	Pro	Ser	Lys	Asp
		275					280					285			
Gly	Lys	Ile	His	Val	Lys	Ala	Glu	Leu	Thr	Arg	Glu	Ile	Tyr	Ser	Asp
	290					295					300				
Val	Ile	Asn	Asp	His	Val	Tyr	Gly	Leu	Met	Val	Pro	Tyr	Ile	Ser	Phe
305					310					315					320
Glu	His	Ala	Glu	Ser	Leu	Tyr	Thr	Arg	Arg	Pro	His	Ala	Phe	Thr	Trp
			325					330							335
Leu	Lys	Gly	Phe	Arg	Phe	Val	Thr	Asn	Ser	Ile	Asn	Ser	Trp	Thr	Phe
		340						345					350		
Leu	Ser	Gly	Gly	Glu	Asn	Arg	Tyr	Phe	Leu	Thr	His	Gly	Glu	Gly	Thr
	355						360					365			
Ile	Tyr	Asn	Gly	Pro	Phe	Leu	Gly	Gln	Asp	Thr	Glu	Tyr	Gly	Gly	Thr
	370					375					380				
Ser	Ser	Tyr	Ile	Asp	Ile	Ser	Asn	Asn	Ser	Ser	Ile	Tyr	Asn	Leu	Trp
385					390					395					400
Thr	Lys	Asn	Tyr	Glu	Trp	Ile	Tyr	Pro	Trp	Thr	Asp	Pro	Val	Asn	Ile
			405						410					415	
Thr	Lys	Ile	Asn	Phe	Ser	Ile	Thr	Asp	Asn	Ser	Asn	Ser	Ser	Glu	Ser
		420						425					430		
Ile	Tyr	Gly	Ala	Glu	Arg	Met	Asn	Lys	Pro	Thr	Val	Arg	Thr	Asp	Phe
	435						440					445			
Asn	Phe	Leu	Leu	Asn	Arg	Ala	Gly	Asn	Gly	Pro	Thr	Thr	Tyr	Asn	Asp
	450					455					460				
Tyr	Asn	His	Ile	Leu	Ser	Tyr	Met	Leu	Ile	Asn	Gly	Glu	Thr	Phe	Gly
465					470					475					480
Gln	Lys	Arg	His	Gly	Tyr	Ser	Phe	Ala	Phe	Thr	His	Ser	Ser	Val	Asp
			485						490					495	
Arg	Tyr	Asn	Thr	Ile	Val	Pro	Asp	Lys	Ile	Val	Gln	Ile	Pro	Ala	Val
		500						505					510		
Lys	Thr	Asn	Leu	Val	Gly	Ala	Asn	Ile	Ile	Lys	Gly	Pro	Gly	His	Thr
	515						520					525			
Gly	Gly	Asp	Leu	Leu	Lys	Leu	Glu	Tyr	Glu	Arg	Phe	Leu	Ser	Leu	Arg
	530					535					540				
Ile	Lys	Leu	Ile	Ala	Ser	Met	Thr	Phe	Arg	Ile	Arg	Ile	Arg	Tyr	Ala
545					550					555					560
Ser	Asn	Ile	Ser	Gly	Gln	Met	Met	Ile	Asn	Ile	Gly	Tyr	Gln	Asn	Pro
			565						570					575	
Thr	Tyr	Phe	Asn	Ile	Ile	Pro	Thr	Thr	Ser	Arg	Asp	Tyr	Thr	Glu	Leu
		580						585					590		
Lys	Phe	Glu	Asp	Phe	Gln	Leu	Val	Asp	Thr	Ser	Tyr	Ile	Tyr	Ser	Gly

		595					600					605					
Gly	Pro	Ser	Ile	Ser	Ser	Asn	Thr	Leu	Trp	Leu	Asp	Asn	Phe	Ser	Asn		
	610					615					620						
Gly	Pro	Val	Ile	Ile	Asp	Lys	Ile	Glu	Phe	Ile	Pro	Leu	Gly	Ile	Thr		
625					630				635					640			
Leu	Asn	Gln	Ala	Gln	Gly	Tyr	Asp	Thr	Tyr	Asp	Gln	Asn	Ala	Asn	Gly		
			645						650					655			
Met	Tyr	His	Gln	Asn	Tyr	Ser	Asn	Ser	Gly	Tyr	Asn	Tyr	Asn	Gln	Glu		
		660						665					670				
Tyr	Asn	Thr	Tyr	Tyr	Gln	Ser	Tyr	Asn	Asn								
	675						680										

<210> 17

<211> 674

<212> PRT

<213> Bacillus thuringiensis

<400> 17

Met	Asn	Gln	Tyr	Gln	Asn	Lys	Asn	Glu	Tyr	Glu	Ile	Leu	Glu	Ser	Ser		
1				5				10						15			
Gln	Asn	Asn	Met	Asn	Met	Pro	Asn	Arg	Tyr	Pro	Phe	Ala	Asp	Asp	Pro		
		20					25						30				
Asn	Ala	Val	Met	Lys	Asn	Gly	Asn	Tyr	Lys	Asp	Trp	Val	Asn	Glu	Cys		
		35				40						45					
Glu	Gly	Ser	Asn	Ile	Ser	Pro	Ser	Pro	Ala	Ala	Ala	Ile	Thr	Ser	Lys		
	50				55					60							
Ile	Val	Ser	Ile	Val	Leu	Lys	Thr	Leu	Ala	Lys	Ala	Val	Ala	Ser	Ser		
65				70					75					80			
Leu	Ala	Asp	Ser	Ile	Lys	Ser	Ser	Leu	Gly	Ile	Ser	Lys	Thr	Ile	Thr		
			85					90					95				
Glu	Asn	Asn	Val	Ser	Gln	Val	Ser	Met	Val	Gln	Val	His	Gln	Ile	Ile		
		100					105						110				
Asn	Arg	Arg	Ile	Gln	Glu	Thr	Ile	Leu	Asp	Leu	Gly	Glu	Ser	Ser	Leu		
		115				120						125					
Asn	Gly	Leu	Val	Ala	Ile	Tyr	Asn	Arg	Asp	Tyr	Leu	Gly	Ala	Leu	Glu		
	130					135					140						
Ala	Trp	Asn	Asn	Asn	Lys	Ser	Asn	Ile	Asn	Tyr	Gln	Thr	Asn	Val	Ala		
145				150					155					160			
Glu	Ala	Phe	Lys	Thr	Val	Glu	Arg	Glu	Phe	Phe	Thr	Lys	Leu	Lys	Gly		
			165					170					175				
Ile	Tyr	Arg	Thr	Ser	Ser	Ser	Gln	Ile	Thr	Leu	Leu	Pro	Thr	Phe	Thr		
		180					185					190					
Gln	Ala	Ala	Asn	Leu	His	Leu	Ser	Met	Leu	Arg	Asp	Ala	Val	Met	Tyr		
	195					200					205						
Gln	Glu	Gly	Trp	Asn	Leu	Gln	Ser	His	Ile	Asn	Tyr	Ser	Lys	Glu	Leu		
	210				215						220						
Asp	Asp	Ala	Leu	Glu	Asp	Tyr	Thr	Asn	Tyr	Cys	Val	Glu	Val	Tyr	Thr		
225				230					235					240			
Lys	Gly	Leu	Asn	Ala	Leu	Arg	Gly	Ser	Thr	Ala	Ile	Asp	Trp	Leu	Glu		
			245					250					255				
Phe	Asn	Ser	Phe	Arg	Arg	Asp	Met	Thr	Leu	Met	Val	Leu	Asp	Leu	Val		
		260					265					270					
Ala	Ile	Phe	Pro	Asn	Tyr	Asn	Pro	Val	Arg	Tyr	Pro	Leu	Ser	Thr	Lys		
	275					280					285						
Ile	Ser	Leu	Ser	Arg	Lys	Ile	Tyr	Thr	Asp	Pro	Val	Gly	Arg	Thr	Asp		
	290					295					300						

Ser	Pro	Ser	Phe	Gly	Asp	Trp	Thr	Asn	Thr	Gly	Arg	Thr	Leu	Ala	Asn			
305					310					315					320			
Phe	Asn	Asp	Leu	Glu	Arg	Glu	Val	Thr	Asp	Ser	Pro	Ser	Leu	Val	Lys			
				325					330						335			
Trp	Leu	Gly	Asp	Met	Thr	Ile	Tyr	Thr	Gly	Ala	Ile	Asp	Ser	Tyr	Arg			
			340					345						350				
Pro	Thr	Ser	Pro	Gly	Asp	Arg	Ile	Gly	Val	Trp	Tyr	Gly	Asn	Ile	Asn			
		355					360						365					
Ala	Phe	Tyr	His	Thr	Gly	Arg	Thr	Asp	Val	Val	Met	Phe	Arg	Gln	Thr			
	370					375					380							
Gly	Asp	Thr	Ala	Tyr	Glu	Asp	Pro	Ser	Thr	Phe	Ile	Ser	Asn	Ile	Leu			
385					390					395					400			
Tyr	Asp	Asp	Ile	Tyr	Lys	Leu	Asp	Leu	Arg	Ala	Ala	Ala	Val	Ser	Thr			
				405					410						415			
Ile	Gln	Gly	Ala	Met	Asp	Thr	Thr	Phe	Gly	Val	Ser	Ser	Ser	Arg	Phe			
			420					425						430				
Phe	Asp	Ile	Arg	Gly	Arg	Asn	Gln	Leu	Tyr	Gln	Ser	Asn	Lys	Pro	Tyr			
		435					440						445					
Pro	Ser	Leu	Pro	Ile	Thr	Ile	Thr	Phe	Pro	Gly	Glu	Glu	Ser	Ser	Glu			
	450					455					460							
Gly	Asn	Ala	Asn	Asp	Tyr	Ser	His	Leu	Leu	Cys	Asp	Val	Lys	Ile	Leu			
465					470					475					480			
Gln	Glu	Asp	Ser	Ser	Asn	Ile	Cys	Glu	Gly	Arg	Ser	Ser	Leu	Leu	Ser			
				485					490						495			
His	Ala	Trp	Thr	His	Ala	Ser	Leu	Asp	Arg	Asn	Asn	Thr	Ile	Leu	Pro			
			500					505						510				
Asp	Glu	Ile	Thr	Gln	Ile	Pro	Ala	Val	Thr	Ala	Tyr	Glu	Leu	Arg	Gly			
		515					520							525				
Asn	Ser	Ser	Val	Val	Ala	Gly	Pro	Gly	Ser	Thr	Gly	Gly	Asp	Leu	Val			
	530					535						540						
Lys	Met	Ser	Tyr	His	Ser	Val	Trp	Ser	Phe	Lys	Val	Tyr	Cys	Ser	Glu			
545					550					555					560			
Leu	Lys	Asn	Tyr	Arg	Val	Arg	Ile	Arg	Tyr	Ala	Ser	His	Gly	Asn	Cys			
				565					570						575			
Gln	Phe	Leu	Met	Lys	Arg	Trp	Pro	Ser	Thr	Gly	Val	Ala	Pro	Arg	Gln			
			580					585						590				
Trp	Ala	Arg	His	Asn	Val	Gln	Gly	Thr	Phe	Ser	Asn	Ser	Met	Arg	Tyr			
		595					600						605					
Glu	Ala	Phe	Lys	Tyr	Leu	Asp	Ile	Phe	Thr	Ile	Thr	Pro	Glu	Glu	Asn			
	610					615					620							
Asn	Phe	Ala	Phe	Thr	Ile	Asp	Leu	Glu	Ser	Gly	Gly	Asp	Leu	Phe	Ile			
625					630					635					640			
Asp	Lys	Ile	Glu	Phe	Ile	Pro	Val	Ser	Gly	Ser	Ala	Phe	Glu	Tyr	Glu			
				645					650						655			
Gly	Lys	Gln	Asn	Ile	Glu	Lys	Thr	Gln	Lys	Ala	Val	Asn	Asp	Leu	Phe			
			660					665					670					
Ile	Asn																	